This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

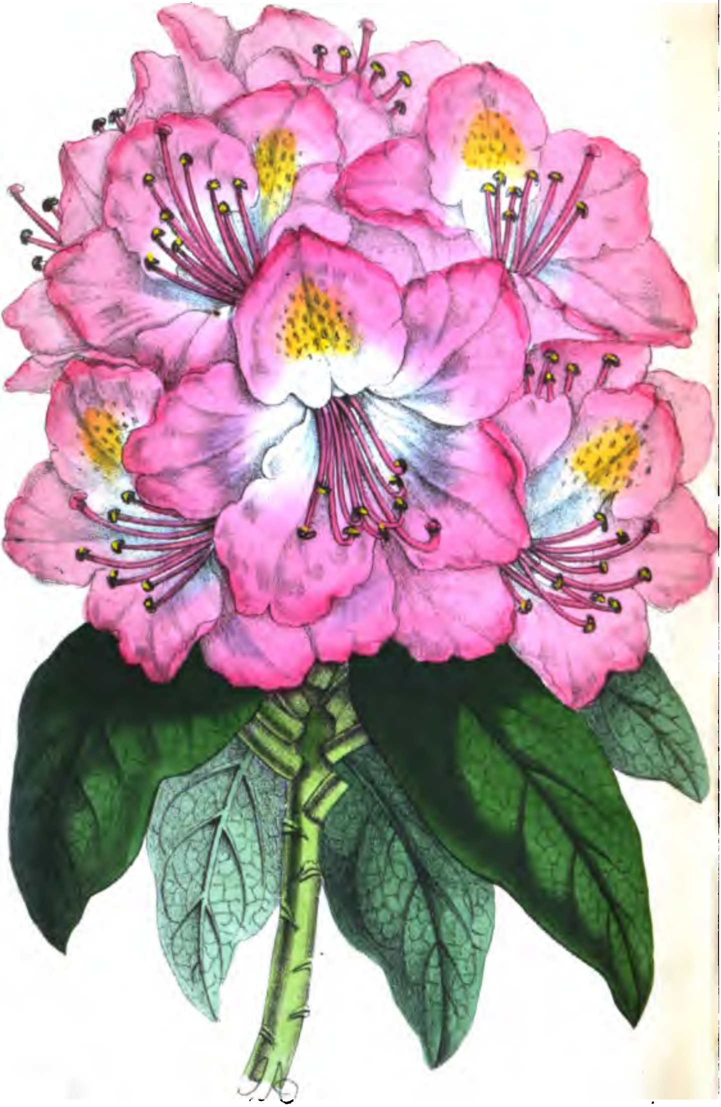
POPULAR FLOWERS

* * *

BERKELEY
LIBRARY
UNIVERSITY OF
CALIFORNIA

BERKELEY
LIBRARY
UNIVERSITY OF
CALIFORNIA

26



Rhododendron

POPULAR FLOWERS;

THEIR

Propagation, Cultivation, and General Treatment

IN ALL SEASONS.

EDITED BY

ROBERT TYAS, B.A., F.R.B.S.,

AUTHOR OF "FAVOURITE FIELD FLOWERS," "FLOWERS FROM THE HOLY LAND," ETC., ETC.

With Twelve Coloured Portraits,
DRAWN FROM NATURE, AND COLOURED BY
JAMES ANDREWS.

Third Series.

LONDON:
HOULSTON AND STONEMAN, PATERNOSTER ROW.
MDCCCLIV.

LONDON:
THOMAS HARRILD, PRINTER, SILVER STREET,
FALCON SQUARE.

SB405
T9
v. 3

ADVERTISEMENT.

It is now many years since the First and Second Series of Popular Flowers were offered to the public. They were remarkably successful in winning the favour of admirers of flowers, and it is in consequence of their retaining that favour that this Third Series has been undertaken. How far it deserves and will obtain an extension of that favour it is not for us to express an opinion. The quantity of matter has been increased, and recourse has been had to the best authorities for information, yet we cannot hope that the methods of cultivation will be universally approved in detail, since the varieties of climate, soil, and situation, even in our little island, are so diverse, that the practice of every cultivator will of

M374898

necessity differ from that of another in smaller particulars. It will be sufficient that we have indicated with accuracy the main points to be attended to in the propagation and cultivation of this our third batch of Flowers, which we trust will be as popular as their predecessors.

March 25th, 1854.

INTRODUCTORY.

"Flowers, as the changing seasons roll along,
Still wait on earth, and added beauties lend:
Around the smiling Spring a lovely throng
With eager rivalry her steps attend;
Others with Summer's brighter glories blend;
Some grace mild Autumn's more majestic mien;
While some few lingering blooms the brow befriend
Of hoary Winter, and, with grace serene,
Enwreathe the king of storms with mercy's gentle sheen."
BARTON.

THROUGH all the changing seasons of the year flowers adorn the earth. True that in our own climate, and in different parts of our island, we can scarce find them blooming in the open air at every period of the year, although in the more southern parts, and in mild seasons, there are some spreading their beauties to our gaze in the very depths of winter. But what nature has denied to some districts of our native country art has supplied, and the natives of foreign climes have become denizens here, and deck at all seasons either the open parterre, the conservatory, the greenhouse, or the stove. There are few persons indeed who cannot procure for themselves some plants that shall display their flowers in succession, even at the most inclement periods. He who can command all the flowers treated of in the following pages may obtain this satisfaction. They are all most deserving of cultivation, and some need but little care and management, while the remainder require no skill beyond what an intelligent mind can acquire by attentive perseverance. Disappointments may, no doubt will, attend early efforts, but experience will teach what dangers are to be avoided, and what means are to be made use of to accomplish the desired end.

Of all pursuits which may legitimately claim the attention of the intelligent amateur there is none so innocent, none so unobjectionable, as that of gardening. It gives ample occupation to the mind, sufficient exercise to the body—both necessary for the preservation of the health of the whole man; while the pure atmosphere which they must breathe who would have their flowers to prosper, must tend to promote the same object. It is a pursuit, too, which wins the sympathy of all who possess the slightest possible taste and refinement, and of all ages, from youth to the decline of life—even the child delights in the beauty of flowers. Thus Mrs. Sigourney sings:—

"The flowers were beautiful to me,
When childhood loved the way
Along the green and sunny slope,
Or through the groves to stray.
They were to me as playmates dear,
And when, upon my knee,
I whispered to them in their beds,
Methought they answered me.

I bent to kiss them where they grew,
And smiling bore away
On lip and cheek the diamond dew
That glittering deck'd their spray.
The bud on which no eye hath glanced,
Save His who form'd its pride,
Seem'd as a sister to my heart,
For it had none beside.

Then countless gay and fairy forms
Gleam'd by on pinions rare,
And many a castle's turret bright
Was pictured in the air;
For Fancy held me so in thrall,
And peopled every scene,
That flowers might only fill the space,
A thousand joys between."

LIST OF PLATES,

IN THE ORDER IN WHICH THE TREATISES ARE ARRANGED.

ACACIA GRANDIS.
ACHIMENES LONGIFLORA.
ANEMONE JAPONICA, HYBRIDA.
ANTIRRHINUM.
CAMPANULA PYRAMIDALIS.
CAPE HEATH.
    ERICA BURNETTII.
CHINESE AZALEA.
    AZALEA INDICA, CRITERION.
CHINESE PRIMROSE.
    PRIMULA SINENSIS, MAGNUM BONUM.
CROCUS.
    VARIETIES.
EPACRIS, ELEGANS (*Ingram's*).
GLADIOLUS, VAN GAGERN.
RHODODENDRON, ROSA.

CONTENTS.

I. THE ACACIA.

PAGE
Propagation 4
    By cuttings 5
    By division of the roots 11
Soil 11
A. grandis 12
A. biflora 12
Treatment of A. biflora 13
A. platyptera 13
A. urophylla 13
A. Kermesina 13

II. THE ACHIMENES.

Long-flowered Achimenes 3
To keep the bulbs in winter 4
Starting the bulbs 5
Treatment of growing bulbs 5
Treatment in pots 6
Compost for Achimenes 7
Mode of increasing Achimenes 7
Rose-coloured Achimenes 7
Treatment of A. rosea 8
Starting bulbs in dwelling-houses 8
Long-stalked Achimenes 9
Treatment of A. pedunculata 10
A. pedunculata, as a drawing-room plant 11
Long-flowered Achimenes 12
Hairy Achimenes 12
Many-flowered Achimenes 13
Silvery-spotted Achimenes 14
Spreading Achimenes 14
Beautiful Achimenes 15
Elegant free-flowering Achimenes 15

III. THE ANEMONE.

Propagation 3
    By seed 3

PAGE
After-treatment of seedlings 4
Anemone beds, and planting 4
To protect Anemone beds 4
After-treatment of established plants 5
Treatment of Anemones when in bloom 6
To procure a succession of flowering plants 6
Taking up Anemone tubers 7
Winter-treatment of Anemones in the ground 8
Anemones in boxes 8
Japanese Anemone 8
Anemone obtusiloba 11
The Rill Anemone 12
Poppy Anemone in pots 12
Blue Wood Anemone 13
Origin of garden varieties 15
Double Anemones 16

IV. THE ANTIRRHINUM.

Propagation 5
By seed 6
After-treatment of seedlings 7
By cuttings 7
After-treatment of rooted cuttings 8
Use of collodion in raising plants from cuttings 9
By division of the roots 13
Soil for the Antirrhinum 13
What a first-rate Antirrhinum should be 14
The Antirrhinum in the open ground 14

V. THE CAMPANULA.

Propagation of the Pyramidal Bell-flower 5
By seed 5
After-treatment of seedlings 5
By division of the roots 6
Treatment after the final shift 7
Soil for C. pyramidalis 8
Plants for succession 8
Watering 8
Winter treatment 9
Time of flowering 9
Carpathian Campanula 9
Propagation by seed 9
Division of the root 10
The Noble Bell-flower 11
Hairy fragile Bell-flower 12
Loefling's Bell-flower 13
The large Bell-flower 15

PAGE

VI. CAPE HEATHS.

Propagation 3
By seed 3
After-treatment of seedlings 5
By cuttings 6
After-treatment of cuttings 8
Shifting plants 9
Potting 10
Repotting 11
Soil for Heaths 11
Summer treatment 12
Watering 13
Specimen plants 13
Mildew 14
Erica Burnettii 14

VII. THE CHINESE AZALEA.

Propagation 2
By seed 2
By cuttings 3
By grafting 5
By inarching 7
Treatment of the Azalea during growth 8
Treatment after flowering 10
To force the Azalea 10
Choice of plants 12
Specimen plants 12
Soil for the Azalea 14
Insects 14
Treatment of the Azalea 15

VIII. THE CHINESE PRIMROSE.

Propagation 10
Raising the plants from seed 10
Treatment of seedlings 11
Treatment of transplanted plants 12
Situation 12
Drainage 12
Watering 13
Spent plants 13
Soil or compost 14
House and out-door treatment 14
Variety "Magnum Bonum" 15

IX. THE CROCUS.

Propagation 5

PAGE
By seed 5
By offsets 6
After-treatment of offsets 7
Situation and locality 8
Soil for the Crocus 8
Planting the Crocus 9
New varieties 10
Chevreul's arrangement of colours for Crocuses 11
Forcing the Crocus 12
Crocuses in Switzerland 12

X. THE EPACRIS.

Propagation 6
By seed 6
By cuttings 6
After-treatment of cuttings 8
Potting 9
Spring treatment of established plants 10
Cutting down 11
Repotting 11
Treatment of potted plants 12
Soil for the Epacris 13
Winter nosegays 14

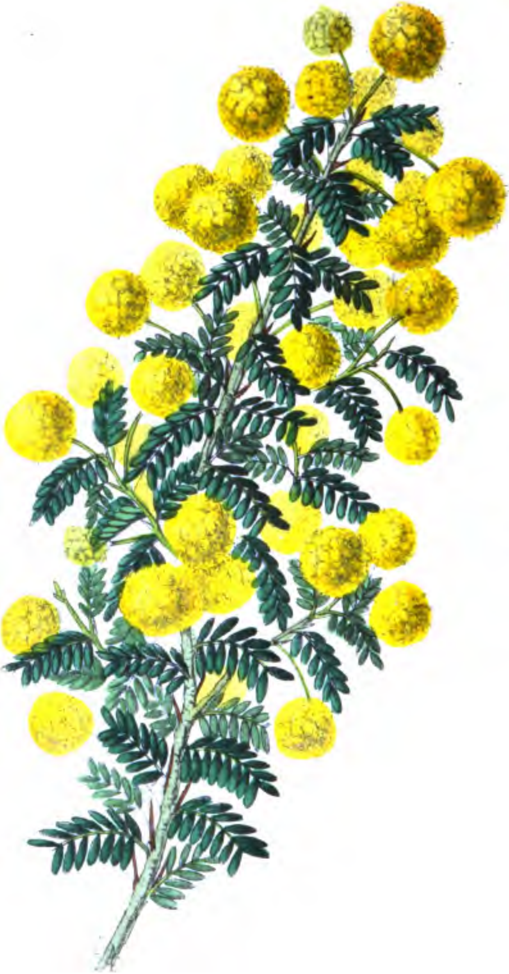
XI. THE GLADIOLUS.

Propagation 2
By seed 2
By offsets 3
By bulbs 3
Spring treatment of seedlings 3
General treatment of G. communis and G. Byzantinus 4
Formation of beds for Gladioli 5
Planting out 6
Taking up the bulbs 6
Succession of flowers 7
Treatment of the Superb Gladiolus 7
Soil for Gladioli 9
Summer treatment 10
Cultivation of Gladioli 10
The Ghent Gladiolus 11
Gladioli in the open air 12

XII. THE RHODODENDRON.

Propagation 5
By seed 5
By layers 6
By cuttings 7

PAGE
Proper situation for the Rhododendron 8
Planting 9
Soil 9
To promote free-blooming and to procure large flowers 10
Standard Rhododendrons 11
Pruning 12
Forcing 12
Grafting 12
Budding 13
To flower Rhododendrons at Christmas 13



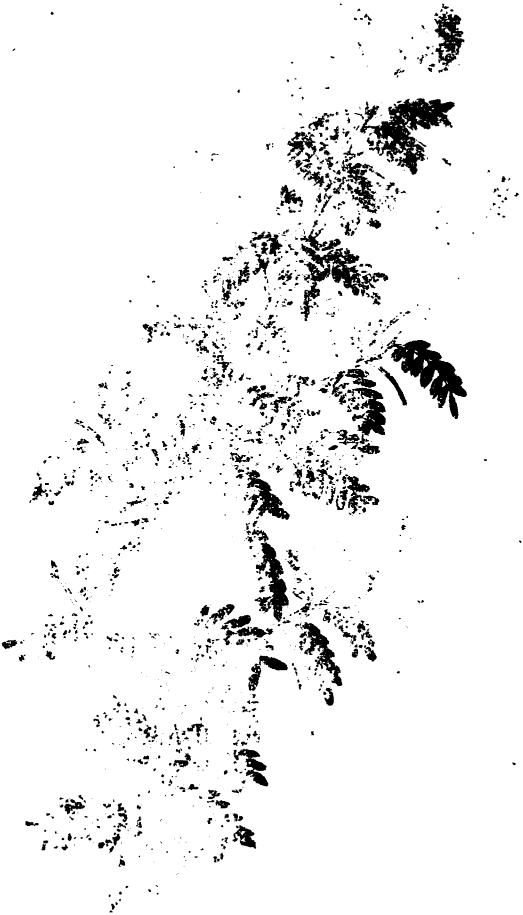
Acacia, Grandis.

THE ACACIA.

THE genus Acacia contains trees and shrubs both useful and ornamental. The common Acacia, which, however, is included in the genus Robinia, is a thorny tree of rapid growth, of middling stature, and though the adult tree possesses no great beauty, yet when young it is very ornamental, and well suited for copse-wood and rough timber. In North America the wood is highly valued, being close-grained, hard, and finely veined, and more valued by the cabinet-maker than any other native timber whatever. Fine pinnated leaves and pendulous white odorous flowers add greatly to the beauty of this tree.

The Rose Acacia is a very handsome shrub, but requires a very sheltered situation, as the branches are very liable to be shattered or blown off by high winds. In young trees grafted above ground, the fracture generally takes place at the graft, so that a good means of prevention is to graft in the root, a little below the surface.

A. Catechu, the Medicinal Acacia, and A. vera, the Egyptian Thorn, are both used in medicine. The Catechu is obtained in the following manner from the inner wood of the former, which is of a brown colour. After felling the trees, the manufacturer carefully [illegible]



[illegible]

THE ACACIA.

THE genus Acacia contains trees and shrubs both useful and ornamental. The common Acacia, which, however, is included in the genus Robinia, is a thorny tree of rapid growth, of middling stature, and though the adult tree possesses no great beauty, yet when young it is very ornamental, and well suited for copse wood and rough timber. In North America the wood is highly valued, being close-grained, hard, and finely veined; and more valued by the cabinet-maker than any other native timber whatever. Fine pinnated leaves and pendulous white odorous flowers add greatly to the beauty of this tree.

The Rose Acacia is a very handsome shrub, but requires a very sheltered situation, as the branches are very liable to be shattered or blown off by high winds. In young trees grafted above ground, the fracture generally takes place at the graft, so that a good means of prevention is to graft in the root, a little below the surface.

A. Catechu, the Medicinal Acacia, and A. vera, the Egyptian Thorn, are both used in medicine. The Catechu is obtained in the following manner from the inner wood of the former, which is of a brown colour. After felling the trees, the manufacturer carefully cuts off all the exterior white part of the wood. The interior coloured part is cut into chips, with which he fills a narrow-mouthed unglazed earthen pot, pouring water upon them until he sees it among the upper chips; and when this is half evaporated by boiling, the decoction, without straining, is poured into a flat earthen pot, boiled to one-third part, and then set in a place to cool for one day. The decoction is afterwards evaporated by the heat of the sun, stirring it several times in the day; and when it is reduced to a considerable thickness, it is spread upon a mat or cloth, which has previously been covered with the ashes of cowdung. The mass is lastly divided into square or quadrangular pieces by a string, and these are completely dried by burning them in the sun, until they are fit for sale. This extract, when first introduced into Europe, was named Terra Japonica, from the supposition that it came from Japan, and was an earth. As a medicine it is one of the most valuable of the vegetable astringents.

From A. vera we derive the gum Arabic of the shops. The tree is found in almost every part of Africa, but those which yield the gum, which is exported from Barbary to Great Britain, grow principally in the Atlas Mountains. It is a hard, withered-looking, low tree, with a crooked stem and a grey bark. The gum exudes naturally from the bark of the trunk and the branches, in a soft, nearly fluid state, and hardens in the air without losing its transparency. It is gathered about the middle of December. It has a faint smell when first stowed in the warehouses, and is heard to crack spontaneously for many weeks. In the

Deccan, where this tree is common, it is called the Babool-tree. It thrives there equally well in a black or red soil. It grows rapidly, and requires no water. When covered with its round heads of yellow flowers it is very ornamental. Moore, in his Lalla Rookh, has introduced it in an Arabian scene:—

> "Our rocks are rough, but smiling there
> The Acacia weaves her yellow hair,
> Lonely and sweet, nor loved the less
> For flowering in a wilderness."

Nearly allied to this genus is the Mimosa, in which we find the Sensitive Plant, of which Darwin writes—

> "Weak with nice sense Mimosa stands,
> And from each touch withdraws her timid hands;
> Oft as light clouds o'erpass the summer glade,
> Alarmed she trembles at the moving shade;
> And feels, alive through all her tender form,
> The whispered murmurs of the gathering storm."

Dr. Dutrochet made a series of experiments upon this wonderful plant, the main result of which we state as follows. The principal point of locomotion, or of *mobility*, exists in the little swelling which is situated at the base of the common and partial petioles of the leaves: this swelling is composed of a very delicate cellular tissue, in which is found an immense number of nervous corpuscles; the axis of the swelling is formed of a little fascicle of tubular vessels. It was ascertained, by some delicate experiments, that the power of movement, or of contraction and expansion, exists in the parenchyma and cellular tissue of the swelling, and that the central fibres have no specific action connected with the motion. It also appeared that the energy of the nervous powers of the leaf depended wholly upon an abundance of sap, and that a diminution of that fluid caused an extreme diminution of the sensibility of the leaves. Prosecuting his remarks yet further, the author ascertained that in the motion of the Sensitive Plant two distinct actions take place: the one of locomotion, which is the consequence of direct violence offered to the leaves, and which occurs in the swellings already spoken of; the other of nervimotion, which depends upon some stimulus applied to the surface of the leaflets, unaccompanied by actual violence, such as the solar rays concentrated in the focus of a lens. As in all cases, the bending or folding of the leaves evidently takes place from one leaf to another witb perfect continuity, it may safely be inferred that the invisible nervous action takes place in a direct line from the point of original irritation, and that the cause by which this action of nervimotion is produced must be by some internal uninterrupted agency. This was, after much curious investigation, determined by the author to exist neither in the pith nor in the bark, nor even in the cellular tissue filled with nervous corpuscles, and on which he supposes the locomotion of the swelling at the base of petioles to depend. It is in the ligneous part of the central system, in certain tubes supplied with nervous corpuscles, and serving for the transmission of the sap, that Dr. Dutrochet believes he has found the true seat of nervimotion, which he attributes to the agency of the sap alone, while he considers the power of locomotion to depend upon the nervous corpuscles alone.

PROPAGATION.—This very valuable genus of greenhouse exotics is propagated by cuttings and by division of the roots.

CUTTINGS.—The greater number of the species will make roots from cuttings. From those kinds which grow the strongest large cuttings are taken off at a joint, and being set in a pot of sand, the pot is plunged in a bark bed, and the cuttings are covered with a hand-glass. In propagating the smaller sorts, younger cuttings are taken, and in like manner placed under a bell-glass and plunged in heat. When the cuttings have formed roots, the sooner the plants are potted off the better will they thrive, indeed, if allowed to remain too long in the sand the roots will be injured. When potted a glass is placed over them, and they should be kept close and shaded for a few days after, and be gradually exposed to the air.

The vital energy of the sap of plants, and its power to reproduce members of which the plant has been deprived, by whomsoever discovered, is made the means of increasing and multiplying innumerable trees and plants with the greatest facility. This power resides in the most remote branches, and is exerted with the greatest success in the production of roots by those extremities of the shoots which have the least substance, and consequently require the least amount of nutriment from without, or rather can longer sustain that privation of supply which its separation from the rooted tree causes. When a portion of a plant is separated from it, and is consequently deprived of its first and natural roots, it immediately seems susceptible of its loss, and being constitutionally capable of repairing it, the separated portion has a tendency to furnish itself with new roots, which it will acquire if placed in circumstances favourable to their development.

Propagators have been taught by experience what parts of a plant most easily supply themselves with roots, and in what soil and situation this is effected the soonest. The points of the youngest branches or shoots possess the greatest amount of vital energy, or rather we may suppose that a portion may be diverted from its natural office of increasing the bulk of the shoot, with less damage to the principle of life than could be done in the case of a branch of greater bulk, which consequently requires a greater and more continuous supply of nutriment. Hence these shoots are found to emit roots most readily, provided that they are not so recently formed as to be too tender; if they are thus tender, there is great danger that they will rot before the new roots are formed. On the other hand, if very old and the wood hard, the vital functions will be so small in proportion to bulk that the cuttings are sure to root slowly, if at all.

But as regards the age or size of the part of the plant from which the cuttings are taken there is great difference in their capability of forming roots. From some plants young shoots half-ripened, that is, which are neither too tender nor too much hardened, require to be selected. Of this sort are African heaths, and numerous heath-like plants from like latitudes. Others are so vivacious that any part of their roots, stems, or branches, if put in a suitable medium, and stimulated by the requisite degrees of air, heat, and moisture, will throw out both roots and shoots, and quickly become independent plants. Of such kind are the willow, the pelargonium, the myrtle, and many others; neither art nor much care is needed in propagating these genera, for they form roots freely at any time in the growing season.

There are, however, many beautiful, and consequently valuable, hothouse and greenhouse exotics which are not so readily propagated by cuttings, unless certain ascertained means are employed. The proper parts must be chosen; they must be rightly prepared for planting, placed in suitable soil, defended from atmospheric action by bell-glasses, and supplied with that special degree of bottom heat which is required to stimulate the cuttings into growth.

As will have been already perceived, cuttings from different genera require different treatment: some will form roots only when subjected to a strong humid heat; for others a gentle heat is sufficient; and some require no heat at all. The general principles acted upon by successful propagators are all that we can give here, and, if properly understood, they will prove a sufficient guide to the amateur in the treatment of the generality of choice kinds of stove and greenhouse plants.

As before stated, the points of the side branches are best for the purpose of rearing young plants, because they grow more bushy, and are brought into a blooming state sooner than plants raised from cuttings selected from other parts of the parent plant. If the plant to be propagated be of very slender growth, the cuttings need not be more than an inch or an inch and a half in length. The lower part of these shoots is commonly of a brownish hue, the point being still green; and in taking them off, a small portion of the brown is taken, which part forms the base of the cutting.

There are two technical terms used by propagators, which it may be well here to define accurately, namely, *ripened* and *unripened* wood. *Ripened* wood is known by its woody firmness and brown colour; *unripened* wood by its greenness and pliant softness. When therefore it is said that a plant strikes root most readily from cuttings of ripe or unripe wood, the direction is at once understood, and is a practical rule.

In the treatise on the cultivation of the Fuchsia, directions have been given for selecting pots, etc.; but as the reader may not have that treatise in his possession, we shall briefly state the substance of them here, premising that the spring months are generally chosen for the work of propagation, and as early in the season as cuttings in their right stage of growth can be procured. This period of the year is most favourable, not only as the awakening time of vegetable life, but as allowing cuttings rooted at this time to be prepared for the genial season of summer.

Procure a sufficient quantity of pots known as thirty-twos, potsherds for draining, a compost of light maiden loam and turfy heath-mould or peat, well mixed but not sifted, and a quantity of pure white fine sand. Put a layer of potsherds, gravel, or cinders in the pot for drainage; then over this a stratum of little lumps of turf; upon this a stratum of the finer compost to within an inch and a half of the rim of the pot; and above all a layer of sand one inch thick, to form the surface. If loose and dry, these materials should be watered, so as to render the whole firm and compact.

It is also necessary to have at hand bell or striking glasses, of sizes suited to the pots, so as to fit exactly *within* the rim of the pot.

The pots being prepared and the bell-glasses provided, the cuttings are gathered and trimmed. All should be as nearly as can be of the same size and age, and put in the same pot, so as to ensnre the same treatment. In making ready the cuttings, whatever their length may be, *one-third* at least of the lower end is divested of leaves, leaving those towards the top entire. The bottom is cut transversely, close below a joint or bud, care being taken to avoid a fracture or splitting the bark. Thus made ready, dibble the cuttings carefully into the sand, and not too thickly together, after which water them, to settle and consolidate the sand. When the moisture is evaporated from the cuttings and surface of the pots, put on the glass and press it closely down, so as to exclude the air.

Sand is found to conduce more to the formation of new fibres than any other kind of earth, for it quickly absorbs any moisture which may flow from or remain around the fresh wound of the cutting; which if allowed to remain would destroy the cutting by becoming corrupt, and so inducing rottenness. The base of the cutting should not be too deeply inserted, for it seems that a certain atmospheric influence is necessary to promote the emission of root-fibres. This may be often seen in striking cuttings, for those which are nearest the side of the pot make roots sooner than those which occupy the middle; and in striking cuttings of considerable length, if the bases of them are made to rest on the crocks or drainage in the bottom, roots will be formed sooner than elsewhere. This can only be accounted for on the presumption that the solid pieces of potsherds or gravel retaining more heat and free air in a hotbed than a homogeneous mass of soil, the vital principle is stimulated with greater power.

The process by which fibrous roots are formed from the base of a cutting is curious, and may be easily seen by using a glass tumbler instead of a common pot. When the cutting, placed close to the side, has been put in for a few days or a week, the first sign of life is the protrusion or oozing out of the member lying between the bark and the fibrous or woody part of the stem. This swelling projection is sooner or later resolved into slender fibres, which spread themselves in the soil to absorb food; and at the same time a growing movement is seen above, a sure indication that the cutting can henceforth provide for itself. It happens sometimes that a cutting will continue quite stationary for many months, without rotting or showing any signs of growth, except a callosity at the base, increasing to the size of a pea before working fibres are put forth; but many form no callosity, new fibres issuing at once from the same place.

The use of the bell-glass in striking cuttings is to afford subdued light, and at the same time to defend the rootless shoot from the changes of the open air.

If the latter were too dry or too moist the cuttings would be either rotted or withered, and if the former were too intense, they would be parched without the glass. To prevent sun-burning, a shade of brown paper should be used in bright weather.

By Division of the Roots.—Although cuttings of most kinds of the Acacia will root pretty freely, taken off in the young wood and planted in sand, under a bell-glass, and the pot then plunged in a little bottom heat, there are yet some sorts which will not readily root from cuttings. These kinds are to be increased by separating the roots, taking as large pieces as can be spared, and then planting them in the same kind of soil as the old plants were growing in, after which they should be placed under a hand-glass, and plunged in a little bottom heat. Most kinds of the Acacia might be propagated by this means of simple division. This method is said to be capable of application only to herbaceous, half-shrubby, or very thickly-growing shrubs. Plants of this kind are compound, and consist of many distinct or nearly distinct individuals, which have no vital bond of union that would be destroyed by separation. Each division is an entire plant, and some suppose that each will grow with more vigour after separation than while pressed on by its congeners. All therefore that plants of this character require is careful separation of the roots to increase the number to almost any extent.

Soil.—The greenhouse Acacias are plants of very easy culture and thrive extremely well in a loamy peat-mould mixed with a considerable quantity of silver sand. The pot must be provided with ample drainage.

ACACIA GRANDIS.—This beautiful species of the Acacia, which is figured in our frontispiece, is of a compact and bushy habit. When in a growing state it requires to bè "topped," as otherwise it is apt to start off with vigorous growth from the base of the plant, and these shoots in that case might grow to the length of a foot or three feet, according to the native energy of the plant. This species blooms very freely, being decked with large globular flowers of a deep golden yellow. The foliage is in form like that of *A. pulchella*, but much handsomer. It requires to be grown in the greenhouse in the spring, and should afterwards be placed in the pit for the summer months, or in a shady border, and protected in the winter by being placed in the house.

ACACIA BIFLORA.—This is a pretty little greenhouse shrub, furnished with small axillary heads of yellow flowers, emitting a fragrance like that of the hawthorn. Messrs. Lowe and Co. raised it from seeds which they received from Swan River. The false leaves have a singular and unusual shape; they have a close resemblance to wedges, having one of the angles mucronate, and the point more tapered than that of the other, and the midrib carried into the larger angle, the effect of which is to give these parts a singularly oblique appearance, and to make them look hunchbacked.

Treatment of Acacia biflora.—This neat-looking plant grows about eighteen inches high. The blossoms appear in pairs, and, besides growing in the axils of the leaves, form a sort of spike at the extremity of the shoots. The plants should be set in sandy loam and heath-mould, with the main roots a little elevated in the centre of the pot, and should be placed in an airy part of the greenhouse. Its stems require to be pruned in time to prevent them from becoming long and bare. Cuttings taken from the tips of the shoots will make roots, though slowly, if treated in the ordinary manner.

Acacia platyptera.—This beautiful greenhouse shrub compensates for the absence of leaves by the quantity and rich yellow colour of its heads of flowers, which are copiously produced on the younger branches. It is a peculiarly free-flowerer, and a most desirable greenhouse autumnal flowering plant.

Acacia urophylla.—This greenhouse shrub is very easily distinguished from all other capitate phyllodineous Acacias with stipulary spines by the size of the leaves, which are from three to six inches long, including a long fine tapering point; the peduncles are short, and the flowers in each head but few, and not conspicuous, but the foliage is elegant, and the flowers are very fragrant.

Acacia Kermesina.—This plant is one of the most graceful denizeus of the stove which yield us their flowers in winter. It is a plant of the most easy culture. It blooms on the top of the shoots, and therefore ought to be stopped when young to force it to throw out a number of side shoots, as in all plants of similar habit, since the greater the number of shoots the more flower-heads.

For more than fifty years this plant was grown in the stove under various appellations, until a new and more popular name being assigned to it, it was placed in the conservatory, where it was found hardy enough to remain there the whole year round. This discovery supplies a plant well suited for concealing the naked branches at the bottom of climbers, since it is an elegant plant covered with fine foliage, and flowering freely in the winter.

The following directions as to the treatment of Acacia Kermesina, so that it may be most successfully bloomed, are from the pen of that skilful florist Mr. Wood, of Pine-apple Place. This plant is strictly hard-wooded, is comparatively slow in its circulation of sap until fully established, whether in pots or otherwise. It blooms on the ends of the current year's growth, and its beauty is in proportion to the unchecked luxuriance of the latter, thus forming a striking exception to a numerous group of plants, the fertility of which depends upon their multiform or branching habit. The management of this and similar-habited plants will be illustrated by the following. In the last week in December, a plant about three feet high, in common with others, was cut back to within the two last buds of the same season's growth, and placed upon an inverted pot on the east side of a stove platform, where it had the benefit of intense light during its growth. In this position it remained about six weeks, being but occasionally watered, and now and then syringed. The plant was extremely slow in the development of its buds; when the young shoots were a few inches in length, it was shifted from a nine-inch to a twelve-inch pot, partially reducing the old ball, and substituting a mixture of equal portions of sandy loam and heath-mould, with portions of coarse dried peat for sub-drainage. The following will serve to show the extra care required in the management of plants whose circulation of sap is slow during their first stage of growth, especially when placed in such sized pots as are intended to dispense with any further shift during the season.

The plant in question, for some time after being potted, continued to make suitable growth, but suddenly assuming a sickly habit, refused to expand its elegantly-winged leaves. As it had been well potted it was at first difficult to account for the change, from which there seemed little chance of recovery, but relying on the proper proportions and arrangement, etc., of the soil for maintaining a uniform circulation of water (other conditions being equal), the only assignable cause was that of the plant having been placed, in common with others, upon a level pit, where the agencies essential to growth, as light, air, heat, etc., were unequal to the amount of moisture in the soil. It was then placed on inverted pots upon a trellised platform, admitting an increased circulation of air, and exposing it to intense light; watering at the root was suspended for nearly a week, and copious syringings substituted, when requisite. By this treatment the plant soon assumed its wonted vigour, expanding its leaves and producing healthy young stems, which by the autumn of the same season (apart from any alteration whatever in the soil) attained four feet in length, on the ends of which were formed the tassels of graceful flowers, upwards of twelve inches in length.

To secure extra vigour in this admirable plant the greatest attention must be paid to supply it with a dry bottom and good drainage; not forgetting that where free exposure to light is essential to the formation of bloom in summer, the same agencies are much more essential during the slow but progressive development of growth in spring.

Clematis [illegible]

THE ACHIMENES.

"Was it not ever one of Nature's glories,
Nay, her great piece of wonder, that amongst
So many millions, millions of her works,
She gave the eye distinction to cull out
The one from other?"

BEAUMONT AND FLETCHER.

How much of earthly enjoyment do we receive through the eye! and yet how few are they, comparatively, whose power of enjoyment by its means is well developed. Countless is the throng of human beings who derive but little, if any, gratification from the flower-garden. By far the greater number of those who live in rural spots pass unheeding by the myriads of wild flowers which bloom on every side. There needs a measure of education before we can take pleasure in looking upon them. We need to know some little of their history and their habits before we get interested in them; but when we have become attached to a few favourites, know well their features and their character, we forthwith begin to look upon every fresh acquaintance with curious eye, to consider in what it resembles and in what it differs from our old friends, and then we perceive its own beauties, though not the same as those we already admire; but thus our floral acquaintance increases, and we come to like each flower more and more, and to distinguish and cull out the peculiar admirable qualities of each. It is not many years since the Achimenes was rudely captured in Guatemala, and packed off to England to be reared and looked at. It was very tractable, grew, nay flourished, and astonished the eyes of florists, and made some think that it was deserving of greater admiration than the gayest of stove herbaceous plants; and indeed it is a most beautiful flower. Moreover, it is extremely easy of cultivation, and blooms with the greatest freedom for several months during the year, and can be increased rapidly and with the greatest facility; all which render it one of the most valuable additions to warm greenhouse plants.

Dr. Patrick Browne appears to have been the first to discover this genus of plants. He speaks of two species in his "History of Jamaica," in which he calls them Achimenes. Subsequently, C. L. L'Héritier, a French botanical writer, named the genus Cyrilla, and one of the species referred to by Browne has long been cultivated in England, and is well known to admirers of beautiful exotics as *Cyrilla pulchella*. Linnæus had before given the same name to another description of plants; and as this new Cyrilla was very unlike it, botanists abandoned L'Héritier's designation, and adopted *Trevirana*, on the suggestion of Willdenow. De Candolle and others, however, rejected the last, and again applied to the genus the name originally given by Dr. Browne; since when the genus has been known as Achimenes.

LONG-FLOWERED ACHIMENES (*A. longiflora*).—The following account of this beautiful flower is printed in the "Transactions of the Horticultural Society." It was written by Mr. Fortune, and contains a full history of the plant, as well as valuable remarks upon its treatment:—"Mr. Hartweg found it growing wild in the ravines of Guatemala, and sent its roots home last spring (1841), along with several other new Gesneraceous and Orchidaceous plants. The roots arrived in very good order, owing to their having been packed in dry loam, and sent home at that period of the year when the plant is naturally in a resting state. In packing and sending home plants of this kind, much of the success depends upon having them gathered and transmitted at the proper season. In this case, the roots, being gathered after the growing season was past, and at the same time surrounded with dry loam, were as nearly as possible in natural circumstances during the voyage to England, and were only enjoying that period of rest which they would have had in their native country, being, as the event proved, as ready to start into leaf and to grow with vigour, after their arrival, as if they had remained in Guatemala. The stems of *Achimenes longiflora* are of two kinds: some creeping along the ground and amongst the soil, and forming fibrous roots and numerous imbricated buds resembling scaly bulbs; others growing in an upright position, from a foot to two feet in height, branching, and covered with short spreading hairs. The leaves are hairy, generally opposite, and in pairs, but on young shoots are frequently in whorls of three, and sometimes alternate. They are oblong, pointed, and serrated, green above, but tinged with red on the under side when fully grown. The flowers grow singly from the axils of the leaves; the peduncles are about half an inch in length; the lobes of the calyx are green, oblong, pointed, and persistent. The tube of the corolla is about two inches long, and the border nearly two and a half inches in diameter, five-lobed, and nearly round, having much the outline of a good Heartsease. The tube is of a dark cream colour; the border purple or deep blue, changing into lilac. The style and stamens are about the length of the tube, but the latter are apparently much shorter, owing to their being spirally curved at their base. It proves to be a plant of the easiest cultivation, flowering in August, and continuing covered with large violet flowers for three or four months. It seems to flourish in any free soil, and is more easily propagated than any plant with which I am acquainted. In the spring, when it begins to grow, this can be done by separating and potting the scaly bulbs described above; afterwards, its creeping stems will strike their roots into the soil, and can be taken off perfect plants; and at all times, while the plant is growing, cuttings may be struck in a few days."

To keep the Bulbs in Winter.—Put the bulbs in dry sand, and place the vessel or box containing them in a warm cupboard, or in any place where they will be secure from the effects of frost. Thus preserved, they will be in good condition when the proper time arrives for planting them.

STARTING THE BULBS.—The bulbs should be set at least an inch deep in pans, well drained and filled with coarse leaf-mould, amongst which it will be well if there be large fragments of leaves. The pans may then be placed in a warm greenhouse near the light, or in a cucumber-frame. This should be done towards the end of February, and more may be planted a month later, to secure a succession of flowers.

If an ordinary pot be used for starting them, select a wide-mouthed one. At the bottom place a much smaller pot in an inverted position, and fill up the spaces between the two with crocks; over this drainage put sandy leaf-mould, and above this a stratum of still coarser leaf-mould with a small portion of sand.

When the bulbs are thus planted, some growers, after giving a little water, place the pans or pots in a hot-bed, or in a house where the temperature ranges from 60° at night to 70° by day, and the fermenting material in which they are plunged from 75° to 80°, not higher, because, if at this early stage they are subjected to an excess of heat or moisture, they will be injured.

TREATMENT OF GROWING BULBS.—The bulbs, if properly planted, will soon begin to grow, and when they have put forth a few leaves, each plant should be transplanted singly into a small pot well furnished with drainage. If a large mass of bloom be desired, several plants may be placed in a large box not much deeper than a six-inch flower-pot. In this mode they form, when in flower, a fine contrast with the verdant hues of the surrounding foliage.

Treatment in Pots.—Some admirers of this attractive genus of plants complain that, by the common methods of growing them in boxes, pans, and baskets, they rarely attain the highest state of excellence. It is alleged that in shallow pans the blooming season is shortened; that baskets need too much looking after; and that the stiff formal boxes in which so many are grown *will* meet the eye and draw it away from the flower, thereby diminishing from the imposing effect they produce when properly arranged in pots. Thus treated, *A. longiflora* and *A. patens* cannot be surpassed in beauty and elegance; so, instead of setting the tubes in small pots and then shifting them into larger as they increase in growth, select at once as many pots as your plants require, ten inches in diameter and twelves inches in depth. At the bottom of each place a few crocks, and upon them put a layer of moss; and in this lay six or seven roots, and cover them slightly with a little leaf-mould, or cow-dung well rotted, and sand. When the young shoots lengthen, add more soil from time to time, until you have filled the pot to within two inches of the rim. This space is to be afterwards filled up with moss, firmly pressed down with the hand. The stems buried in this way in the soil very soon throw out a large quantity of roots, which, it is said, are never brought into action when the bulbs are planted within about an inch of the surface. *A. longiflora*, thus treated, has grown to the height of two feet and a half, and the measurement through, from one side of the mass of plants to the other, has been the same. The plants have also bloomed from the early part of May to the latter end of September, several of the flowers being at least three inches in diameter.

COMPOST FOR ACHIMENES.—These plants thrive well in a compost formed by the mixture of equal parts of rotten dung, sandy loam, and turfy peat, to which is added a little silver sand. These materials should be thoroughly mingled together in the autumn of the year preceding that in which they are to be used, and be allowed to remain exposed to the action of the atmosphere until required. They should, however, be kept under a shed, so as to prevent rain falling upon them.

MODE OF INCREASING THE GENUS ACHIMENES.—A quantity of imbricated bulbs, which are also very commonly called tubers, are formed by these plants both upon the stems and roots, from which new plants are easily raised. These bulbs are very curious in their appearance. Some of them, such as those of *A. pedunculata*, are easily kept in paper, and in spring will soon push out shoots when placed in a suitable position.

ROSE-COLOURED ACHIMENES (*A. rosea*).—This is not only one of the choicest plants of the genus, but of exotics generally. It displays a large mass of flowers of a rich deep rosy colour. The peduncles are somewhat more slender than those of some other species, with spreading hairs, and generally the plant shows a disposition to branch. On the leaves are scattered rough elevations, each furnished with a hair. It was found in Guatemala, or Central America, by Mr. Hartweg, who forwarded roots of it to the Horticultural Society's Gardens, where it bloomed in the autumn of 1841.

TREATMENT OF A. ROSEA.—The roots planted in rich soil require to be started in a moderate heat, such as that of a cucumber-frame or warm greenhouse. Here it will form its stems and flower-buds, when it may be transferred to the conservatory or dwelling-room to bloom. When it has ceased flowering, the stems will gradually perish, and then it is necessary to store the roots in a place which is perfectly dry, where they must remain through the winter and until they begin to shows signs of growth in the spring. At this period the roots may be divided, if thought advisable, and then repotted and set in a position near the light, and supplied with a sufficiency of water. It can be readily propagated, either by cuttings, or by the many scaly bulbs which it puts forth both upon the stem in the axils of the leaves and underground.

STARTING BULBS IN DWELLING-HOUSES.—Those lovers of flowers who have neither greenhouse, cucumber-frame, nor yet a garden, may enjoy the luxury of growing Achimenes under their own care, by procuring from a nurseryman a few pots properly prepared with drainage and filled with suitable compost, and placing the pots, in which the roots are set, on the mantelshelf of a warm sitting-room in which there is a fire daily, or on the top of a shelf in a kitchen, near the ceiling. Here they will start into growth, and with due attention to watering will, in due time, be fit to remove into a sitting-room, where they will bloom through the summer.

LONG-STALKED ACHIMENES (*A. pedunculata*).—This species was introduced at the same time as *A. rosea*, being sent to the Horticultural Society by Mr. Hartweg, who discovered it in the shady forests of Santa Maria, Guatemala, where the mean temperature is about 80°. It first yielded a display of flowers in September, 1841; these are many and of a large size, of deep scarlet of a peculiar tinge, and have crimson spots dispersed over the surface. Its habit and consequent treatment resemble those of *A. rosea*. The plant blooms in the latter part of summer and in autumn, after which its stems die down. In this state they are put away in the pots in which they flowered, in a thoroughly dry place, until the following spring, at which time they require to be repotted, placed in a warm situation and the soil kept moist, when they will soon begin to grow with vigour, and require to be watered more frequently and liberally. Propagation similar to the other species.

Mr. Paxton (now Sir Joseph, K.B) describes the colours of this species as "deep vermilion and orange." Its habit is also very peculiar, and on this account presents a fine change from *A. longiflora*. One valuable property which it possesses is that of long continuance in flower, specimens being in full bloom at Ealing, in Mr. Mountjoy's nursery, so late as October. This species is of a strong erect habit, growing upright to the extent of eighteen inches to two feet, and bearing its handsome flowers near the summit of the stem, on long axillary footstalks, which are generally furnished with two blossoms. The colour of these is a dark vermilion, with a light orange-coloured throat, and dark stripes in it extending nearly across the segments of the limb. Curious little bulb-like tubers form themselves on the upper part of the peduncles, together with minute leaves. In order to get this species to a high state of perfection, it should be made to grow rapidly from the time of starting, which is best effected by a warm moist atmosphere; and if this be created by bottom-heat, it will be the more congenial. This artificial climate seems to approach near that in which it is a native, for there heavy rains fall chiefly during the nights, which are followed by bright and cloudless days, with an average heat considerably above that of our summer heat. A loamy soil of moderate richness is needful. The stems of this species do not die off so rapidly as those of its allies, and therefore cautious watering is necessary in the autumn.

TREATMENT OF A. PEDUNCULATA.—As soon as the foliage shows symptoms of decay, which it will do shortly after the plant has ceased to bloom, diminish the supply of water, and gradually withhold it altogether. Then remove the pots to a position which is quite dry, and where the plants are not likely to be affected by frost. There let them remain until near the middle of January, and then take the roots out of the pots and shake off all the soil. Having prepared pans, by furnishing them with a good drainage, and filling them with a mixture of burnt turf, silver sand, and turfy peat, together with a quantity of pieces of charcoal no larger than a nut, to within an inch or so of the rim, place the roots in an orderly manner upon the surface, and fill up the pans to the top. This done, set the pans in a warm spot near the glass, either in a greenhouse, cucumber-frame, or vinery. The young shoots will soon be seen above the surface, and as soon as they are deemed able to bear removal, transplant each into a small pot. Here they will speedily multiply their roots, until they may be seen all round the ball of earth in which they grow, and having arrived at this stage of their growth, they may be again removed into six-inch pots supplied with good drainage. It is a good plan to put three plants into every pot, as by this method a fine bush may be formed, by constantly pinching off the top until that object is attained, beginning when the second pair of leaves have opened out; also no sticks are needed. Let the syringe be passed over them every fine evening. By this treatment the plants will be ready for removal into the greenhouse, in the middle of May, when they will soon show for flower.

A. PEDUNCULATA, AS A DRAWING-ROOM FLOWER.—The strong, erect, and stately habit of this species demands our special notice, and together with its great beauty and the permanence of its bloom render it inferior to none of its family. It is one of the best, undoubtedly, for the drawing-room, where it will continue for weeks without dropping a single leaf, and maintain its profuse bloom of orange-coloured flowers, without change, for an incredible time.

LARGE-FLOWERED ACHIMENES (*A. grandiflora*).—This species is thought by some to be as fine as *A. longiflora*. The leaves are somewhat like those of the elm, are covered with coarse hairs, in shape ovate-oblong, serrated, larger on one side than on the other, of a deep green colour on the upper surface, and on the under side stained with blood-red veins. The flowers grow on a stalk as long as the petioles of the leaves, are of a rich violet purple, and extremely handsome. They are remarkably saccate at the base; the eye of the flower is white, and the tube is delicately powdered inside with purple. The length of the corolla is something more than two inches.

HAIRY ACHIMENES (*A. hirsuta*).—In habit, this pretty species bears a closer similarity to *A. pedunculata* than to any other. It has, in common with that species, the peculiarity of forming little scaly bulbs between the axils of its leaves and branches. It is, nevertheless, quite distinct. Its leaves are clothed with coarse hairs; the flowers are considerably larger than those of *A. pedunculata;* they are not striped either, but are distinguished by a rich rose-coloured border, the lobes of which are notched.

The introduction of this species is worthy of being noticed. When a case of plants arrives, gardeners generally first remove the principal contents, and then unceremoniously cast away the moss and mould and loose fragments which remain; and sometimes thus throw away, perhaps, some choice importation. We are not unfrequently indebted to apparent accident for new plants, as well as for important discoveries in science. We are told that the *Canna iridiflora* was procured from seeds which were casually taken from an old herbarium; many *Orchidaceæ* have sprung from pickings of dried specimens; and this species of Achimenes adds another to those which have been accidentally obtained. A number of Orchidaceous plants, imported from America, were sold by auction some ten years ago, and among them Mr. Henderson, of Pineapple Place, detected this Achimenes; and so it happened that a species which probably had on former occasions been carefully sent, was now discovered without any suspicion of its being amongst the importations.

MANY-FLOWERED ACHIMENES (*A. multiflora*).—This is a very beautiful stove plant. Mr. Gardner sent home seeds from Brazil, where it is found growing wild on dry banks, in woods on the Serra de Santa Brida, and near Villa de Araya. Plants were raised from these seeds, and flowers were first bloomed at the Royal Botanic Garden of Glasgow. The bloom continues for a very long time, and there is a constant succession of flowers ever opening out. The plant has a simple stem rising about twelve inches in height. The flowers are about two inches long, of a deep lilac within, and of a pale hue without, particularly the tube, which is funnel-shaped. The limb is formed into five nearly equal rounded lobes, deeply fringed at the margin.

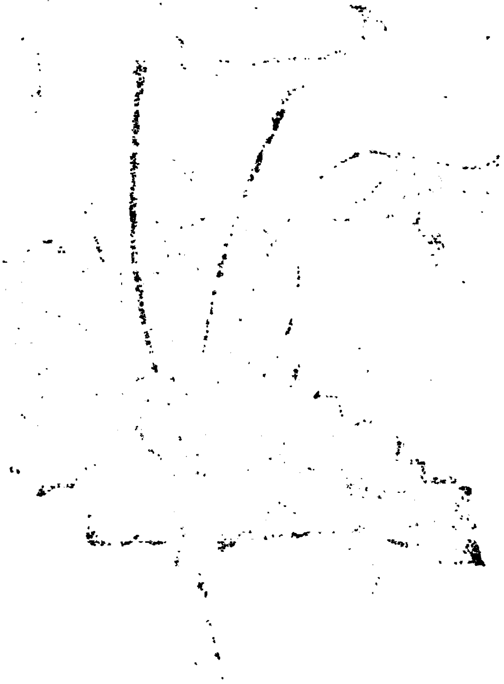
SILVERY-SPOTTED ACHIMENES (*A. argyrostigma*).—This is a stove perennial of great interest. It was sent over, among many other novelties, by the collector for the Royal Botanic Gardens, Kew, from the Sierra Nevada de Santa Marta, in Granada. This chain passes through the centre of the province. The leaves of this species of the Achimenes are singularly beautiful, being of a rich, velvety dark green, with a tinge of purple, spotted with white, as in *Begonia argyrostigma.* The flowers, which are of long duration, are white, or rather cream-colour, with red spots. The treatment required is the same as that which other species of the family thrive under; but it seems desirable, when it has been first started and reared in a moist and hot stove, to transfer it to a cooler locality, since by that means both the foliage and the bloom are maintained in their pristine beauty for a longer time. It forms a number of scaly caterpillar-like tubers, by which it may be easily increased.

SPREADING ACHIMENES (*A. patens*). — This is a greenhouse herbaceous native of Mexico, where it was discovered by Mr. Hartweg. Its habit and foliage resemble those of *A. longiflora,* but its flowers are of a rich violet, so intense as to be beyond the reach of imitative art. This beautiful colour gradually fades into a clear brilliant purple on the exterior of the corolla, and again appears on the tube in a tint intermediate between the two. The border of the corolla is slightly notched, and its tube is extended into a peculiar blunt horn, which projects beyond the calyx, and is more or less lobed at the sides. The corolla, measured across the flat border, is about an inch and a half, and the tube is a little larger.

This species, like the majority of the genus, may be so managed as to be in bloom at almost all seasons of the year, requiring only to be kept perfectly dry when in a state of rest. It is best started gradually, and thrives most satisfactorily in a composition consisting of a small portion of well-decomposed cow-dung, and half-decayed leaf-mould, in a very rough state. A close atmosphere, neither very hot nor very damp, suits it best. It is extremely handsome, being one of the finest of the genus, both in respect of its foliage and the colour of its flowers. It is propagated with great ease by the scaly roots.

BEAUTIFUL ACHIMENES (*A. venusta*).—This is a beautiful hybrid, of a neat, compact, and dwarf habit; its bloom is profuse, outline elegant, colour rich, culture easy, and is well suited to small collections, and is a great favourite. The colour of the flowers is a rich violet-purple crimson, with orange centre, spotted with brown.

ELEGANT FREE-FLOWERING ACHIMENES (*A. floribunda elegans*).—This is exceedingly beautiful, and, like the preceding, a hybrid. Its flowers are of a bright rosy carmine. Both are amongst the smallest of free-flowering plants, and in all the desirable features of pot-plants may be regarded as models of perfection; and are decidedly far in advance of most others. In their habit of growth they are equal to *A. rosea,* but contain much larger blossoms, with three times their number.



[illegible]

THE ANEMONE.

OUR indigenous Anemones are exceedingly beautiful, though frail and fleeting. The Wood Anemone decks our woods, and hazel copses, and shady groves with its pale-white and simple beauty in the months of March and April; and occasionally we meet with the Yellow Wood Anemone in similar localities in the latter month. The Blue Mountain Anemone is also seen in a few favoured localities, and the Pasque-flower Anemone is found in dry chalky and loamy pastures, in different parts of England, in April and May. The first of these has been sometimes transferred from its native woods to the domestic garden, where its stamens will occasionally become transformed into petals, and the flower assumes a semi-double form, and continues longer in bloom than the single variety.

How pleasantly do these flowers usher in the joyous season of spring, to which Earl Surrey dedicated this one of his sweetest sonnets:—

"The soote season, that bud and bloome forth brings,
  With grene hath clad the hill, and eke the vale;
The nightingall, with feathers new, she sings,
  The turtle to her mate hath told her tale,
Somer is come; for every spray now springs,
  The hart hath hung his old head in the pale,

The buck in brake his winter coat he flings,
The fishes flete with new repayred scale,
The adder all her slough away she flings,
The swallow swift pursueth the flies smale,
The busy bee, her honey now she mings.
Winter is worne, that was the floure's bale;
And thus I see among these pleasant thynges
Eche care decays, and yet my sorrow sprynges."

Our pretty Anemone was, in days of old, known by the poets as Adonis-flower; thus Ben Jonson introduces it under that name:—

"Well done, my pretty ones—rain roses still,
Until the last be dropt, then hence, and fill
Your fragrant prickles for a second shower.
Bring corn-flags, tulips, and Adonis-flower."

Our gardens have long been beautified and enriched with spring species of the Anemone from other climes, but within the last few years we have had a valuable addition in an autumnal blooming species, namely, the Japan Anemone, which flowers in September. An admirer writes thus of what he calls a charming acquisition:—"It belongs to that limited class of flowers appropriately designated as 'everybody's,' and as such is the more to be prized. Equally adapted for the greenhouse, the window, and the flower-garden, it addresses itself to every one who loves flowers and possesses a square foot of ground to grow it in. Blooming so late, renders it peculiarly adapted for decoration in plant-houses, as well as for prolonging the beauty of the flower-garden. Its facility of increase by roots must render it universal in a short time. Every one who values a beautiful plant simply for its beauty, and not for its costliness or rarity, should by all means procure *Anemone Japonica.*"

PROPAGATION.—The common garden Anemones, which are chiefly planted in beds prepared in the open ground, produce seeds in great abundance, by which species and varieties are indefinitely multiplied, and new varieties are continually obtained. The new Japan Anemone is propagated by means of root-buds, which will be found particularized in the account of that plant.

BY SEED.—The seed of the Anemone is very likely to be lost when approaching maturity, unless vigilantly looked after, as the wind soon scatters it, if not gathered sufficiently early. It is the practice with some growers to sow the seeds as soon as they are ripe, in a bed of light rich earth, prepared in a thoroughly dry situation. The plants from seeds thus sown come up immediately, and when they can be laid hold of they should be carefully thinned out, so that those intended to remain may grow more freely. Seedlings thus raised will bloom beautifully in the following spring.

Other cultivators, when they have gathered the seed, keep it in a dry place until the month of January; they then rub it among dry sand so as to separate it from its downy covering, and then sow it in a prepared seed-bed, formed of fresh kindly loam of a good depth, secured against worms by a thick layer of quick-lime at the bottom. A shallow one-light frame is used to protect the seedlings as well before as after germination, indeed up to the time their leaves wither, when the young tubers may be taken up.

AFTER-TREATMENT OF SEEDLINGS.—Seedling Anemones require to be kept rather damp, and they should be inured by degrees to bear full exposure to the air. When the leaves are quite withered the tubers may be taken up. As these are small and dark coloured, much care is necessary in order to find them. When picked up and cleared of earth, they may be kept in a dry cool place until October, when they should be again planted. These young seedling tubers should be planted in a nursing-bed by themselves, as they mostly flower in the second year.

ANEMONE BEDS, AND PLANTING.—The beds for the Anemone may be made about the beginning of October; the soil should be loosened pretty deep, and within eight inches of the surface a substratum of loam and well-rotted cow-dung is laid in, and upon this a surface-layer of lighter loam is placed to receive the tubers; it is well to turn the contents of the bed over frequently, so that the whole of the bed may be submitted successively to the action of the atmosphere. The tubers are planted in drills five inches asunder, and four inches apart from each other in the row, and afterwards covered two inches deep.

TO PROTECT ANEMONE BEDS.—In winter and spring Anemones are liable to be seriously affected by excessive rain, and by snow and frost, and in summer their frail flowers are soon injured by rain and the scorching heat of the sun. Protection becomes, indeed, often absolutely necessary, and it is well to have the means always prepared of sheltering them when needful. A cheap, efficient, and easy method of protecting Anemone beds is to place iron or wooden hoops over them, taking care to fix the extremities of the hoops firmly in the ground; by which means a frame is provided, upon which mats can be laid when required. The hoops should be at a pretty good height from the surface of the beds, because any covering laid on or close to the beds would very much injure the plants; free air, if not too frosty, is always necessary. Of course the mats must be securely fastened to the hoops, in order to prevent their being blown off by the wind.

AFTER-TREATMENT OF ESTABLISHED PLANTS.—The *Anemone coronaria*, or Crown Anemone, and the *Anemone hortensis* are treated in precisely the same manner. They will live and thrive, as elsewhere stated, for years in a dry and well-drained border of light soil, thoroughly exposed to the solar rays; but they are very subject to the attacks of grubs, and also to injury from the humidity of winter, to avoid which dangers it is the safest practice to take up the roots of both.

The principal time for planting is towards the end of October; but, in order to procure a succession, some tubers are frequently put in the ground in the spring. Occasionally these late-planted roots will not start into growth until the year is considerably advanced, owing to the extreme dryness of the soil and season. In such cases, the best plan is to leave them in the ground throughout the winter, carefully protected from excessive moisture, snow, and frost; but at the same time allowing them the full benefit of air and sun whenever the temperature will permit. Thus treated they will put forth their flowers in the early months of the ensuing year.

If any of the beds become parched before the time of flowering, the surface should be stirred a little, some fresh loam added and pressed close to the plants; and if the interior of the bed has also become rather dry, a good soaking of manured water should be given, to strengthen the plants and secure good bloom.

TREATMENT OF ANEMONES WHEN IN BLOOM.—The flowers of the Anemone are fleeting, and their beauty soon passes away. When the period of their blooming is sought to be prolonged, and their beauty desired to be preserved, they must be shaded from the sun's rays during the hotter part of the day.

TO PROCURE A SUCCESSION OF FLOWERING PLANTS.—When we take particular delight in any one flower, admiring it more than many others, we are naturally desirous of maintaining its beauty for as long a period as we possibly can, and when our efforts to accomplish this seem to have reached their limit, we turn our thoughts to the consideration of the practicability of hastening the blooming of some of our plants, and of retarding that of others, by which means we secure that peculiar enjoyment which we derive from looking upon their beauty throughout as great a portion of the season as art can obtain.

This method has been tried with some success in the case of the Anemone. We cannot indeed materially anticipate the usual period of flowering, because the roots will not bear any considerable amount of artificial heat; but by keeping the tubers out of the ground, in a dry and cool place, and planting them at successive periods, we can retard the bloom of many plants, and thus prolong the season of flowering. To this end, beds are prepared with soil in which Anemones delight, and that seems to be a light friable or sandy loam, to which is added a quantity of cow-dung, equal to one-third of the mass of loamy soil. In these beds, thus prepared, the first planting should be made in October, the second a month later, and so on until the end of February, if the weather will allow. By adopting this method a succession of blooming plants may be secured throughout the greater part of summer.

TAKING UP ANEMONE TUBERS.—After the flowering is over the foliage gradually withers away, and the tubers become dormant, especially if the weather be dry; if it be otherwise, florists sometimes endeavour to keep the bed dry, to hasten the ripening of the tubers, as no excitement should follow the flowering.

When the flowers are dead, and the foliage is turning yellow, which will be in about a month after blooming, the tubers should be taken up out of the beds, and placed in a shady situation to dry. When they are dry rub off all the fibres. Stow the tubers in a cool and dry place, until the planting season returns.

The beds from which the tubers have been removed should have the surface soil removed to the depth of twelve inches, and after a quantity of very rotten manure has been put in, the same should be replaced, and the soil be ridged up until the time of planting. In replanting, manure must not be used, as it destroys the roots if it comes in contact with them.

WINTER TREATMENT OF ANEMONES WHICH ARE ALLOWED TO REMAIN IN THE GROUND.—If the season be moist after the Anemones have bloomed, and means have not been adopted to keep the beds dry, it is sometimes found, when the tubers are being taken up, that they have put out fresh fibres. In this case it is better to leave them in the ground, and to give the beds a top-dressing of rich compost at the end of August.

ANEMONES IN BOXES.—Boxes of any dimensions as to length and breadth may be used for the purpose of growing Anemones, but the depth must not be less than nine inches. At the bottom place ample drainage, and then fill the boxes up with light rich loam. In this the roots should be planted, at the depth of an inch and a half, and every root should be so placed as to be at least five inches from all the rest. To secure good bloom let these plants receive an abundance of water, and give them the advantage of all the direct solar heat that can be commanded until the flowers display themselves; then, to prolong the period of blooming, let the box be shaded throughout the hottest part of the day. By planting the tubers at different times, as above directed, a succession of Anemones in boxes may be had in bloom for a long period.

JAPANESE ANEMONE (*A. Japonica*).—This beautiful species was erroneously thought to be an Atragene, and is so called by Thunberg, a Swedish botanical writer. His description of it, however, induced De Candolle to suspect that it was an Anemone, and he hinted that probably it belonged to that genus, and as such it is now universally regarded. In beauty it is quite equal to *Anemone coronaria* of the Levant, and certainly not less worthy of our admiration than the Chinese Chrysanthemum. Mr. Fortune, the unwearied collector for the Horticultural Society, discovered it at Shanghae, the Japanese port of China, and forwarded it home to Chiswick, in 1844. It flowered in one of the greenhouses of the Society, in the autumn of 1845, the flowering stems being nearly twenty-four inches high. Siebold states that its native habitat is damp woods, on the margins of small streams, on the mountain called Kifune, near to the city of Miako, in Japan; he also informs us that the Japanese cultivate it extensively for the sake of its beautiful purple blossoms. It is said by many to prefer a moist loamy soil, and its propagation in Japan is chiefly by offsets, its seeds seldom ripening. Siebold further observes that it grows at considerable elevations on the mountains in the interior of Japan, and thence infers that it is sufficiently hardy to brave the winters of the European continent.

In January, 1848, the editor of the *Gardener's Chronicle* made the following observations upon this plant, and the singular provision made for its propagation:—"The Japan Anemone produces its large purple semi-double blossoms in the months of October and November, at that moment when the gay border-flowers of summer begin to shrink from the cold and damp nights which the autumn brings in its train to England. A native of damp woods on the mountains of Japan, this hardy Asiatic disregards the chilly night air of Great Britain, and all such rigour as it may meet with there in winter. We have no frost that will harm it, no spring easterly winds capable of pinching it, no summer heat with power to scorch it; on the contrary, our climate is like its own, and it is as certain to throw up its tufts of broad green leaves and autumnal flowers in England as on Mount Kifune. The plant is inferior to few of the Verbenas, and to none of the Petunias, as a border flower it is superior in foliage—there is a long succession of its large purple blossoms; and as it produces seed without difficulty, it may be expected to sport into as many varieties, and to become as much improved by art as the gay spring Anemones of Mesopotamia. To all this is to be added a surprising readiness to multiply independently of seed, so that whoever acquires one plant, may in a few months obtain young ones sufficient to cover square yards of ground.

"It owes this property to an extraordinary power of forming buds upon its roots. In general, the roots of plants are, under natural circumstances, destitute of this power; and instances to the contrary are regarded as curious exceptions to a common law. Such exceptions are found in the Mountain Pœony (a plant of the same natural order), in the Plum-tree, the *Pyrus Japonica*, etc.; but in none of them, nor in any other species with which we are acquainted, does the power reside in the same degree as in the Japan Anemone.

"If a root of this plant be taken from the ground after flowering, it will be found to resemble brown cord, divided into a great number of ramifications. Upon its surface will be perceived a great multitude of little white conical projections, sometimes growing singly, sometimes springing up in clusters, and occasionally producing small scales upon their sides. These are young buds, every one of which, if cut from its parent, will grow and form a strong young plant in a few weeks. These buds are not confined to the main trunk of the root, but extend to its extremities; so that every fragment is reproductive.

"Such being the case, he who possesses an *Anemone Japonica* has nothing to do but to turn it out of its pot, when at rest, clean its roots, chop them into pieces about half an inch long, and then place them in some light fibrous soil near the surface, in a gentle hotbed, and in a few weeks he will have as many healthy young plants as he may have chopped the roots into pieces. Such is the wonderful power of reproduction, to which indeed we have few parallels. It may be regarded as a real, not fabulous, Hydra."

ANEMONE OBTUSILOBA.—This is an herbaceous plant, hardy and perennial, and a native of the Indian Alps. Dr. Wallich gave it the name of *A. Govaniana*, in compliment to Dr. Govan; but Professor Royle having determined it to be identical with the species which Don had previously named *obtusiloba*, the latter must be regarded as its true designation. It is closely allied to *A. narcissiflora*, which is distinguished by its shorter flower-stalks and deeply divided leaves. Dr. Royle informs us that the native locality of this species is the Choor Mountain of the Himalaya heights, at elevations varying from ten thousand to twelve thousand feet. It flowers there in May.

In cultivation, this pretty little flower is found to be a hardy Alpine plant. It is only about six inches high when fully grown. It is well suited for pots, and for rockwork, when the situation is somewhat shaded and damp. It is readily propagated by seeds. The seeds are sown early in the spring, in a soil made up of leaf-mould and sandy peat, with the addition of a small quantity of loam. When the seeds have germinated and the young plants have become large enough to bear removal, they are potted singly in very small pots, and put in a cold frame, the back of which is turned to the sun during summer. After this they are treated in the usual way. They will not bloom until the second season. The months of flowering are June and July.

THE RILL ANEMONE (*A. rivularis*).—This is a hardy perennial species. It grows about a foot and a half high. It suffers in winter from excessive moisture rather than from cold. It is easily propagated by seeds, or by division of the old plants. Seedlings will not flower until the second season. June, July, and August are the months in which it blooms, which it does most freely. It was first obtained in this country from seeds sent hither by Dr. Falconer, of Saharunpur, but it is now often met with in collections of seeds received from the north of India. This species is frequently met with in various localities in Northern India. Professor Royle says it is common in Neussooree and elsewhere, near water.

THE POPPY ANEMONE IN POTS.—"This flower," says Mr. Errington, "does admirably in the winter in pots; at least it may be had with ease in the course of January. I have had some in five-inch pots, carrying six to eight blossoms to a pot, of rich scarlet, crimson, purple, or mottled colours mixed. A bed of these should be sown every year, about the middle of March, in a very warm, sunny, and sheltered situation; these will bloom, on good ground, slightly the same autumn. In the spring following, however, they will blossom strongly, and will have ceased flowering and be at rest by the middle or end of May. As soon as the stalks turn yellow, they may be taken up and laid on the ground, behind a wall or hedge, in total shade, for a week. Some of the best roots should then be selected and potted in five-inch pots, and the pots plunged in ashes, in a shady aspect, until the middle of August, covered slightly over with ashes to prevent their drying or acquiring much water. At this period they should be removed to a warm situation, plunged until the first week of October, when those wanted for winter work should be removed to the cold pit or frame, and plunged in ashes again."

THE BLUE WOOD ANEMONE.—The following beautiful description of this pretty flower is from the pen of Mr. W. Wood, of Pine-apple Place. "Turning over the pages of an authoress, whose name has become immortalized in connection with the poetry of flowers (Mrs. Hemans), I met with lines on the Blue Anemone, in which it is designated the "flower of the soul." Probably the species alluded to is the Blue Wood Anemone (*A. apennina*), which is one of the most interesting of our spring flowers. The symbolic meaning would, however, to an ordinary observer, be scarcely recognised apart from a knowledge of the character and habit of the plant. It is of low and carpet-like habit, unfolding its close and compact leaves a few inches above the ground, like a protecting canopy over the germs of beauty which lie couched beneath, but which, when matured, appear above them, expanding with the early sunbeam, and closing with its declining ray. As a native of shady places (which its name implies), its delicate structure at first sight appears unfavourable to its preservation, but Nature has endued it with favourable conditions for artificial exposure. Its dwarfness is a security from the effects of wind, and its ample foliage, expanding the upper surface to the light, secures a uniform elevation, and supports the numerous slender flower-stems which emerge from beneath it, and further preserves from harm the beauty of the flowers, which, more than most others, are "born to blush unseen;" the leaves are clothed with silk-like hairs, which act as conductors of water, and thus, by limiting the amount of absorption, preserve the plant from the accumulated pressure of atmospheric moisture, which falls from the trees by which it is often surrounded, and within whose shade it luxuriates. Partial shade appears essential to its perfect growth, and a bright and genial atmosphere for the expansion of its bloom. The only difference it assumes, when removed from its native localities to more exposed situations, is a less luxuriant habit; hence it is extremely beautiful in early spring, when grown *en masse* in flower-beds bordered with *A. nemorosa pleno* (Double White Wood Anemone). Its azure blue blossoms would also contrast well with the snowy whiteness of *Iberis sempervirens* and *I. saxatilis* (perennial Candytufts); and it would be still more valuable as a relief to the dense masses of the vivid yellow Alpine Wallflower (*Cherianthus alpinus*). The poetess's spiritual comparison of the reflected colours of the firmament upon its flowers—their quick contraction, or "shrinking," before the gathering storm, the "passing breeze," and the "vernal shower"—and anon, their bright and joyous expansion on the return of sunnier skies, are not less true than figurative, and emblematic of the soul shrinking under the vicissitudes of life or the reverses of hope.

This species is found in a wild state near Canterbury; near Berkhampstead, Herts; near Harrow-on-the-Hill; at Luton-Hoo, Bedfordshire; in Wimbledon Woods; and in the Duke of Somerset's Park, Wimbledon. It flowers in April; is rare as a wild flower, and is considered to be a doubtful native. In many parts of Italy it is the most common species, and its abundant beautiful blue flowers render it one of the most gay and conspicuous plants, especially in the hilly districts of the Apennine range.

ORIGIN OF GARDEN VARIETIES OF THE ANEMONE.—Garden varieties of the Anemone are, for the most part, derived from the following species:—*A. coronaria*, or Poppy Anemone, an ornamental perennial, blooming in April and May, and bearing scarlet flowers. It has long been naturalized in England, being imported from the Levant as early as 1596. It is dried up in summer on the hot banks of the Euphrates and in the scorched plains of Syria, a condition of the root which is imitated by us in taking them up and drying them. This lifting is not, under all circumstances, necessary. If the soil be light and dry, and the surface be wholly exposed to the sun, these Anemones will continue for years to flourish with great beauty, without being taken up at all. *A. hortensis* is a native of Italy, of the same colour, but of somewhat larger growth, and introduced at about the same period. *A. stellata*, or Star Anemone, which some authorities identify with *A. hortensis*, and others with *A. pavonina*, or Peacock-eye Anemone, which last is of French origin, but the date of its importation is uncertain. This species bears a red flower, and under favourable circumstances grows at least a foot high. *A. coronaria* is the most common.

DOUBLE ANEMONES.—Double varieties of Anemone should be planted in pots in the month of October, the pot being well prepared with drainage; as this plant is very impatient of superfluous moisture and soon injured by it, it should be filled with a compost made up of cow-dung, river sand, and maiden loam. One-fourth of the whole quantity should be cow-dung, one-fourth fine river sand, and one-half loam, procured fresh from an unbroken pasture. When the operation of potting is complete, set the pots in a cold frame or pit, and give them from time to time but little water until spring arrives, when the plants may be moved to a warmer place.

Antirrhinum

THE ANTIRRHINUM.

There is an old picture representing the human face divine of a man and woman, both smirking and smiling when held in one position, and inscribed below with the words "before marriage;" if we turn the picture round so that the top becomes the bottom, we still observe two faces, but the expression of each is grim and sour, and below are the expressive words "after marriage." These faces, especially when held in the latter position, always remind one of the Snapdragon, a name which is singularly characteristic of the appearance thus presented, whether it has or has not any reference to it. It would be difficult perhaps to find the true origin of the name, though there is something in its appearance sufficiently grotesque to produce alarm in the mind of a child, especially when it is made to open and shut rapidly with a snapping motion, as to account for its fabulous appellation. The name of the genus Antirrhinum is very expressive, since the flower seems to be the counterpart (ἀντί) of a nose (ῥινός) or snout.

A. majus, the Great Snapdragon, is very commonly met with on old walls, and among the ruinous remains of ancient castles and other buildings, also upon wild cliffs and solitary rocks. It is regarded as an indigenous plant by some, and accordingly placed in our British Floras, though some botanical writers suspect it to be an outcast from gardens, and that it is self-propagated, being accidentally, as it were, introduced into different parts of the country by persons who have either admired its flowers for their beauty, or who have been struck by their singularity.

A religious-minded author has written the following beautiful lines, wherein the Antirrhinum is supposed to speak of itself, and shows how, by its seclusion and the barrenness of the locality in which it grows, it more especially displays the wondrous wisdom of creative power:—

> "I am rooted in the wall
> Of buttressed tower and ancient hall;
> Mortared in a barren bed,
> By the cunning trowel spread;
> Of a living stock alone
> Brother of the lifeless stone.
>
> Else unprized, I have my worth
> On the spot that gave me birth;
> Nature's vast and varied field
> Braver flowers than me will yield,
> Bold in form and rich in hue,
> Children of a purer dew;—
> Smiling lips and winning eyes,
> Meet for earthly paradise.

Choice are such, and yet thou knowest
Highest he whose lot his lowest.
They, proud hearts, a home reject
Framed by human architect;
Humble I—can bear to dwell
Near the pale recluse's cell,
And I spread my crimson bloom,
Mingled with the cloister's gloom.

Life's gay gifts and honours rare,
Flowers of favour! win and wear.
Rose of beauty, be the queen
In pleasure's ring and festive scene.
Ivy, venturous plant, ascend
Where lordly oaks a bold stair lend.
Vaunt, fair lily, stately dame,
Pride of birth and pomp of name.

Miser crocus, starved with cold,
Hide in earth thy timid gold.
Travelled dahlia, thine the boast
Of knowledge brought from foreign coast.
Pleasure, wealth, birth, knowledge, power,
These have each an emblem flower;
So for me alone remains
Lowly thought and cheerful pains.

Be it mine to set restraint
On roving wish and selfish plaint;
And for man's drear haunts to leave
Dewy morn and balmy eve.
Be it mine the barren stone
To deck with green life not its own,
So to soften and to grace
Of human works the rugged face;
Mine the Unseen to display,
Where crowds bedim truth's languid ray,
Where life's busy arts combine
To shut out the Hand Divine:

Ah! no more a scentless flower;
By approving Heaven's high power,
Suddenly my leaves exhale
Fragrance of the Syrian gale.

> Ah! 'tis timely comfort given
> By the answering breath of heaven!
> May it be! then well might I
> In college cloister live and die."

The Antirrhinum, or, as it is more commonly called, the Snapdragon, has been cultivated in our gardens from time immemorial, where it is an attractive and very showy plant. The flowers vary much in colour, some are dark crimson, others a pale pink, and there are those of every shade of red between them; again we find them from a deep yellow fading off to a faint yellow-white, and others in all the gradations between these tints; sometimes the tube is white, the lips dark crimson, and the palate yellow, and anon the tube is variegated in others with pink and white. These various coloured flowers, and their tendency to "sport," as it is technically called, having been observed by some adventurous hybridizer, led first one and then another professional florist to turn his attention to the improvement of the flower, and within the last few years it has been in a manner recovered from the waste places of the earth, where for the most part the owl and the bat alone have their dwelling, educated and trained, and admitted to share the honours of the greenhouse and the conservatory, where it gratifies and delights the eyes of the noblest and fairest of the land.

Although the Antirrhinum has now been made a florist's flower for some time, yet it was doubted whether it would ever deserve to rank as such. A cultivator, a long time ago, expressed his opinion on the subject, which present experience seems to have justified. He remarks, "It is often asked, can the capabilities of these flowers ever enable them to enter the rank of florist's flowers, and if so, to what position will they be able to elevate themselves among these too-frequently overruled and rigidly-disciplined favourites? In reply, I would state that the Snapdragon flower, as regards markings and colours, is endued with powers and capabilities which, with attention and judgment in cross-breeding and culture, will ere long prove its right to range prominently amid the best of Flora's productions. A very brief period has as yet been devoted to the improvement of the Antirrhinum, and yet the rapid advancement the better and more attractive properties of this flower have made in this short space of time encourages me to hope that we may expect greater distinctness and regularity in its stripes and markings than in the Carnation or the Tulip themselves. This statement is based upon the fact that *A. Youngii*, a choice seedling, is a flower regularly marked and invariably having equal colouring on each side. Last year, out of eight or ten bushes of it planted in different parts of my garden, I did not discover any difference in any one of the flowers, which, however, are by no means good as to form. I believe that the old *reticulatum*, and the varied ones, like Ibrahim Pasha, will sustain the same fact with regard to invariability of marking."

PROPAGATION.—The Antirrhinum is increased in three ways: namely, by seed, for the purpose of raising new varieties; by cuttings, and by division of the roots, to multiply improved kinds.

By Seed.—It is well to dig the ground in which the seed is intended to be sown, in the autumn, adding at the time a quantity of manure and thoroughly incorporating it, but allowing the ground to remain in a rough state, so that a large quantity of the soil may be exposed to the action of the winter frosts. In spring the soil will be found in a mellow condition; it should then be well forked over in dry weather, when it will allow of a smooth surface of finely pulverized soil being prepared for the reception of the seed. If the seed to be sown be of mixed kinds, all that needs to be done is to sow it evenly over the bed, and then cover them by carefully raking the surface; but if seeds saved with care from different varieties, or from flowers which have been fecundated by pollen from other kinds, then it will be necessary to mark out the ground into as many plots as there are kinds of seeds to be sown, and to mark the variety sown in each plot by such labels as may have been found most durable. Cheap and very durable labels may be made of any common wood, cut into lengths of about eight inches, about a quarter of an inch thick, and an inch broad. These are then painted with a very thin coat of white paint, and before the paint is quite dry, the name of the flower is written upon the label with a broad and soft black-lead pencil. When the seeds are sown, and the bed carefully raked over, it will need no more attention until the young plants are fit for removal, unless the weather be unusually dry, when a little water may be given towards evening, to promote the germination of the seeds. The Antirrhinum being an indigenous plant, of course it is perfectly hardy, and the seed-beds may be prepared in the open garden; the most suitable time for sowing the seed is early in the month of April.

AFTER-TREATMENT OF SEEDLINGS.—When the young plants have attained sufficient magnitude to bear transplantation, let a bed of larger dimensions than the seed-bed be prepared, by digging, for their reception. Into this remove the nurslings, which of course must be so planted as to allow room for their expansion without interfering with each other, which would retard their growth and make them weak and unhealthy. This may be done by planting all at least five or six inches apart from each other. In this bed let them remain until they flower, and then select for cultivation and propagation those plants which have flowers approaching most nearly your standard of perfection. If the standard received by professed florists be adopted, then those which possess the requisite properties are only to be retained for that purpose, and these must be named and numbered, and a book of reference must be accurately kept, to prevent mistakes.

BY CUTTINGS.—The directions which have been given in other treatises in this series render it unnecessary to give detailed particulars of the mode of preparing the cutting-pot. Suffice it that the most ample drainage is as requisite for the Antirrhinum as for any other plant, and that upon the drainage must be placed a rough compost of loam, leaf-mould, and sandy peat, in equal proportions, and above it a layer of somewhat less than an inch in thickness, of fine sand, moderately moist, lying level with the rim of the pot, and even throughout its surface. The pots being made ready, select the cuttings from the side shoots, making choice of weak rather than strong shoots, the latter, as in most plants of this nature, being very liable to fail through the superabundance of sap. Remove the leaves at the base of the cutting, which must be cut clear transversely, and leave two or three leaves at the top. Then place the cuttings round the pot, close to the rim, at a sufficient distance to prevent their leaves from touching. When all the cuttings are planted, give them a gentle watering, and, when the moisture is dried off the leaves, place the pots in a frame. They will of course require to be shaded from the sun at first, and to be kept sufficiently moist; but they will soon bear exposure, and may then be placed in the sun for a short time daily, and in about three weeks they will have formed their roots. The Antirrhinum may also be propagated by cuttings in a shady border, under a north wall, and protected by a hand-glass.

AFTER-TREATMENT OF ROOTED CUTTINGS.—When the cuttings have formed roots, prepare pots with the same compost as that used in the pots in which they were struck. Plant them singly, and set the pots in a cold frame or shady border. They will not, at first, bear the sun or free air, but must be gradually made to bear both, and when fully established may be turned out into the open garden.

Use of Collodion in raising Plants from Cuttings.—The successful result of some experiments in the propagation of plants by E. J. Lowe, Esq., F.R.A.S., F.G.S., etc., induced the author to take "the liberty of forwarding to the Royal Society" the following "short paper upon the subject, for the guidance of those who are interested in the advance of horticulture." It is of such great interest and manifest importance that we transfer it to our pages.

"It had occurred to him that if a cutting of a plant were sealed at the base, so as to exclude the moisture of the soil from ascending the stem in injurious quantities, the method of striking cuttings of most species of plants would not be so precarious a process as at present, and accordingly some collodion was obtained in order to make the experiment."

The author states that immediately upon the cutting being severed from the parent stem, the collodion was applied to the wound, and then left for a few seconds to dry, after which the cuttings were potted in the ordinary manner.

To test the value of this new process more effectually, duplicates of all the species experimented upon were at the same time similarly planted, without the collodion being applied to them.

The experiments were carried on in two different ways; one batch of cuttings being placed in a hot-bed, whilst a second batch was planted in the open ground, without even the protection of glass.

FIRST BATCH.

All the cuttings in this batch were placed in a hot-bed on the 1st of September, and examined on the 1st of October.

STOVE PLANTS.

Number of Cuttings planted.*	Name of Plant.	Number of Cuttings rooted.	
		To which Collodion was applied.	Without the application of Collodion.
1	Ixora coccinea..........	1	0
1	Tacsonia miniata	1	1
3	Franciscea Hopeana.........	3	0
3	Franciscea Pohliana	3	0
2	Gloxinia Maria Van Houtte	0	1
2	Begonia incarnata...........	2	1
8	Achimenes patens...........	7	6
2	Hoya bella.....................	2	1
2	Rondeletia speciosa	2	1
2	Allamanda neriifolia.........	2	1

GREENHOUSE PLANTS.

6	Boronia serrulata	5	0
3	Polygala Dalmaisiana	1	0
6	„ grandiflora...........	3	2
6	Verbena luna.................	6	6
1	Chorozema cordata	1	0
1	Epacris pallida	0	0
2	Leschenaultia formosa.......	2	1
1	Swainsonia astragalifolia ...	1	0
1	„ galegifolia........	0	0
2	Abelia rupestris...............	2	0
4	Plectranthus concolor picta.	2	2

---

* The number of cuttings with collodion was the same as that of those without, both in the first and second batch.

SECOND BATCH.

These were all planted in the open ground on the 1st of September, and examined on the 1st of October.

HARDY PLANTS.

Number of Cuttings planted.	Name of Plant.	Number of Cuttings rooted.	
		To which Collodion was applied.	Without Collodion.
12	Garrya elliptica..............	5	1
12	Erica vagans............	7	4
18	Bupleurum longifolium......	6	0
12	Laurus fœtens.................	10	7
6	Rose, Souvenir de la Malmaison.......................	4	3
12	Taxus baccata, golden-leaved variety	8	4

SUMMARY OF EXPERIMENTS.

	Total Number of Cuttings planted.	Number rooted.		Difference in favour of Application of Collodion.
		With Collodion.	Without Collodion.	
First Batch...	59	46	23	23
Second Batch	72	40	19	21

The author considers that the experiments speak for themselves. Though the season was too far advanced to allow of the full benefit of the process being determined, still more than double the number of cuttings were rooted by the new method than by the old. The mortality in the open ground was increased by slugs having eaten off above the soil some of the cuttings; those thus damaged were examined after they had been in the ground a month, and it was found that the collodion was quite as sound as when first applied. It would therefore appear that the collodion seals the wound of the cuttings, and protects it from the fatal effect of damp, until roots are prepared to force through the covering of gun-cotton.

It is further stated that the application of this solution has been found to be exceedingly beneficial in the pruning of such plants as *Euphorbia speciosa*, *Impatiens latifolia*, *Impatiens latifolia-alba*, *Hoya bella*, *Hoya imperialis*, etc., the cut branches being prevented from bleeding.

It is the author's intention next spring to follow out these experiments, in budding and grafting, as he considers that it will also be useful in this branch of horticulture.

Gutta-percha, dissolved in ether, was in some instances substituted to heal the wounds caused by pruning; but owing to this solution not drying as rapidly as collodion, the first, and sometimes the second, application was not sufficient.

The effect of these solutions upon cut flowers was very marked. Two branches were gathered as nearly alike as possible; to the flower-stalks of the one collodion was applied. These flowers were placed in vases filled with water; those coated over with collodion began to fade in thirty-six hours, and many were quite dead in three days; whilst the flowers merely placed in water in the ordinary manner remained fresh and healthy. Those that faded soonest were *Reseda odorata* and *Tropæolum majus*, and those which were least affected were *Tagetes erecta* and *Senecio erubescens*.

BY DIVISION OF THE ROOTS.—Those who have not sufficient tact or patience to propagate choice kinds by cuttings, or those who are not anxious to procure a large increase of their stock rapidly, may propagate successfully a favourite variety by dividing the roots into as many portions as there are eyes or stem-buds, securing to each, if possible, some of the root-fibres, with their extreme points uninjured. The subsequent treatment of plants raised by division of the roots is the same as that adopted for cuttings.

SOIL FOR THE ANTIRRHINUM.—Good loam should abound in any compost for this plant. In order to procure this, get a quantity of turf from an old pasture in an elevated position; let it be cut three or four inches thick, and place the turves in a heap under a shed, or stack them up and cover them, so as to prevent the rain from soaking them. In the course of nine or twelve months all the grass and root-fibres will be thoroughly rotted, and the whole will form a valuable mass of vegetable loam. Take a quantity of this, and add to it one-third leaf-mould and one-third sandy peat, and mix with it a little old mortar-rubbish, such as that in which this plant is often seen to luxuriate in old ruins. A compost thus made will be the best for this flower, either in pots or in the border.

WHAT A FIRST-RATE ANTIRRHINUM SHOULD BE.—Mr. Glenny, F.H.S., whose definitions of the qualities to be required in a florist's flower are esteemed the most accurate in the floricultural world, thus states the properties which are necessary in an Antirrhinum to render it a first-rate specimen.

1. The plant should be dwarf; the flowers abundant; the mouth wide; and the more the inner surface turns up to hide the tube the better.

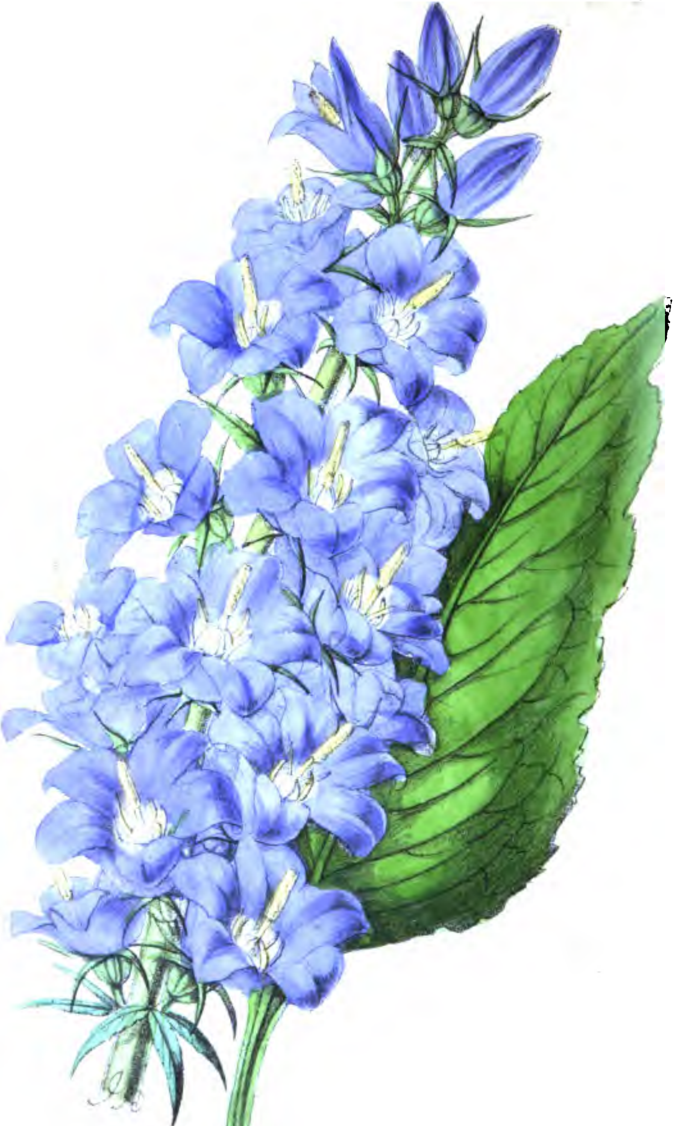
2. The tube should be clear and pure, if white, and if any other colour, it should be bright; and the mouth and all the inner surface should be of a different colour and texture, and form a contrast with the tube.

3. The petal should lap over at the indentations, so as not to show them; the texture of the tube should be like wax or enamel; the inside surface, which laps over, should be velvety.

4. When the flower is striped or spotted, the marking should be well defined in all its varieties; the colour should be dense, whatever that colour may be.

5. The flowers should form spikes of six or seven blooms, close, but not in each other's way; and the foot-stalks should be strong and elastic, to keep them from hanging down close to the stem, which they will do if the foot-stalks are weak.

THE ANTIRRHINUM IN THE OPEN GROUND.—The Antirrhinum, being a native of Britain, or at any rate thoroughly acclimatized, grows well and lives for years in the open ground; but to grow it as a neat plant much care is required. The beds must be well prepared, by a good drainage of old brick-rubbish and large gravel being first placed at the bottom, at between two and three feet below the surface, and the soil must be enriched by thoroughly-decomposed vegetable mould and manure; the plants should be planted in these beds about the middle of October, where they will thrive, and amply repay all the trouble bestowed upon them.



Campanula Pyramidalis.

THE CAMPANULA.

A FEW short years ago we spoke of the Hollyhock and the general neglect of its beauties, and we ventured to express our hope and belief that it would soon be restored to that position amongst florists' flowers of which it is so eminently deserving. Our hope has been gratified, and it has since then received, and is now receiving, great attention from those who are well able to improve its character and multiply its varieties.

The Campanula is another instance of the caprice of fashion even in the things of nature; it was many years ago a fashionable plant, but it gradually gave way before the *Lobelia splendens* and *fulgens*, when they appeared above the horizon of the floral world. True, the Campanula might here and there be met with, and in Holland particularly its cultivation was continued because it was a plant which, from the rigid persistence and duration of its flowers, was admirably adapted to adorn large halls and staircases, and to set before an empty fireplace in summer; but yet it was only noticed as one of the countless and vulgar throng of exotics which were kept in cultivation on account of their utility for specific purposes.

Independent of the influence of fashion, there are other reasons why the Campanula might cease to be a florist's flower. To procure an ordinary fine plant it required no very high floricultural skill, and consequently the amateur might be successful in its cultivation, when the more skilful professional florist would naturally devote his time and attention to the rearing of more tender exotics, which would give a wider scope for the display of his peculiar talent, and yield him a higher amount of remuneration, by reason of the greater demand for those flowers which, though much admired by amateurs, could not be cultivated by them so as to attain such perfection. These the amateur would therefore purchase largely, in order to admire and enjoy that beauty which they themselves were unable to secure without the application of professional skill.

We trust, however, that this species will receive more attention. The whole genus is very showy; some of the species are extremely beautiful, and what is of great importance to the amateur, they may be easily cultivated in the borders of the flower-garden and the shrubbery. The *Campanula pyramidalis* demands our particular notice, as also a comparatively recently-introduced species, *C. grandis*. The former, when treated as it ought to be, will produce a flower-stem from eight to sixteen feet high, regularly branching from the bottom upwards, and thus forming a grand pyramid, which, when the flowers are fully expanded, presents a mass of floral richness almost unequalled, and when in this state it is placed in an entrance hall or the broad landing of a noble staircase, it will continue to display its beauty for a very long period.

We cannot speak of these exotic species of the Campanula without reminding our readers that we possess several indigenous species of singular beauty, growing wild in various parts of our island. Some of them are rare, others are more common in hilly and sandy localities, and perhaps that which is most widely scattered is the Round-leaved Bellflower (*C. rotundifolia*), which is common nearly everywhere. Hear how a merry light-hearted maiden was affected by this pretty Blue-bell; they seem to reflect her own gay and cheerful spirit:—

"Over the moorland, over the lea,
Dancing airily, there are we;
Sometimes mounted on stems aloft,
We wave o'er Broom and Heather,
To meet the kiss of the zephyr soft:
Sometimes close together,
Tired of dancing, tired of peeping,
Under the whin you'll find us sleeping:
Nodding about and dreaming too;
Dreaming of fairy cups of dew—
Dreaming of music, soft and low
As the melodies that flow
In tiniest ripples along the pool,
In summer twilights dim,
When the night-wind's breath is cool,
And downy owlets skim
Lightly along from shore to shore,
Flitting about as if they bore
Upon their trembling wings
(That ne'er are seen by day)
Dreams and visions, fantastic things,
That people the Lily's slumberings
With a shadowy array
Of forms that Flowers own and see
When they are dreaming e'en as we
Merry Harebells do
On the heathery lea.
Maiden, do not you
Often wish you were a Flower,

Spending one or two
Merry days in greenwood bower,
As the Harebells do,
Dancing, and waving, and ringing in glee,
Over the moorland, and over the lea?"

It is now blooming in full beauty in our rural lanes, and seems to impart a sober cheerfulness to them, at a season when many flowers, having fulfilled their functions, have died and withered; and leaves of trees are changing from bright green to pale yellow, incessantly dropping off the branches which they so lately adorned; the busy reapers are at work in the adjoining fields, and from time to time we meet with the waggon laden with the golden produce of our fields, and because this little flower blooms at this joyous season of harvest, it has been called the Harvest Bell. Its beauty and its name have fired the poetic imagination of a fair authoress, with whose pleasing lines we close this brief introduction.

"The autumn wind doth faintly wail;
There is music borne on the gentle gale,
As fairy bells their notes were pealing,
Quick to the ear of fancy stealing.
Hark! the flowers the breeze is swinging,
And Harvest-bells are sweetly ringing.

Merry they ring, for the ripened corn,
Load after load, hath been past them borne;
Gathered with thanks—garnered in joy—
No more can blight our hopes destroy;
Joy that our often prayers are heard!
Praise for our daily bread, O Lord.

Again the breeze the flowers hath shaken;
Its blasts a knell of sorrow waken;
And, echoing their heavy breath,
They mourn the lovely summer's death;
Or, prescient of their coming doom,
They sigh at thought of winter's gloom.

> O Harvest-bells, I mourn with ye
> The speed with which all bright things flee!
> We love their sweetness, own their power,
> Yet lose them in one little hour.
> Chain then no more to earthly clay
> Hearts which should own a higher sway!"

PROPAGATION OF THE PYRAMIDAL BELLFLOWER (*C. pyramidalis*).—This plant, so valuable on account of the beauty of its flowers and their long continuance in bloom, is propagated in two ways, namely, by seed and by division of the roots.

BY SEED.—If plants suitable for pot culture be desired, the seed is sown in the month of March, in pans filled with leaf-mould and sandy peat, and when the young plants are grown to a sufficient size to bear removal, they are planted out in a light rich soil, in sixty-sized pots, and shifted into larger as required, and in this condition they are permitted to remain until they commence growing in the spring of the following year.

AFTER-TREATMENT OF SEEDLINGS. — When the young seedlings are one year old, and begin to show signs of growth, the strongest of them are made choice of for potting. At first they are set in pots which are only just large enough to admit the roots without their being cramped, and to encourage them to grow slowly, by which means they are rendered more healthy, which is the main object at this stage of their existence, since it is not desired that they should bloom until they are more than two years old. As the summer advances they may be shifted again about the end of June, if the cultivator deems it expedient, but it is considered necessary that they should not continue through the winter in a pot larger than an eight-inch. The principal object is to obtain well-ripened fibre or vegetable tissue with highly elaborated sap, so that the plants may be well able to resist the severe weather of the winter season.

BY DIVISION OF THE ROOT.—This operation may be performed early in March. Make choice of some of the strongest of the slips and cut them into desirable lengths; then pot them separately in four-inch pots, filled with a light sandy soil, with sufficient drainage. When potted set them in a frame, where there is a moderate degree of bottom-heat; here numerous shoots will speedily spring up. Remove from every plant all the shoots but the strongest, and when necessary give the plants a shift into larger pots. Thus treated they should make good specimens by the ensuing spring, ready to bloom in the course of the summer.

Assuming all the operations of division, excision of superfluous shoots, and shifting to have been successfully performed, and that the plants have passed through the ordeal which winter provides in damp and frost, without injury, it will be found at the vernal equinox (about March 21) that the centre of the crown of each plant is surrounded by a quantity of young leaves, testifying to the fact that Nature is re-awakening from her winter's slumbers, and slowly rising into a state of vigorous and active vitality. Now are the labours of the anxious cultivator renewed, and preparatory thereto he waters the plants freely, so that the ball may be thoroughly soaked, after being so long kept in a dry state; a day or two after, the surviving plants are shifted into the pots in which they are to bloom, and as the amateur performs the operation he already sees, in imagination, the glorious spike of flowers gladdening his delighted eyes; but while thus revelling in anticipated gratification, he remembers that the plants will have to be removed from one spot to another, more than once it may be, and therefore he is careful not to use a larger pot for each than one man can lift when filled with soil. He also has due regard to the well-being of the plant, and accordingly he provides ample drainage at the bottom of the pot, upon which drainage he places a layer of lime rubbish, broken into fragments varying in size from that of a filbert to a chestnut, and over this a stratum of soil, upon which he gently deposits the plant with the ball (from which he has carefully extracted all the worms) entire, and as he goes on filling up the vacant spaces with soil, he ever and anon scatters around and among it a handful of the fragmentary lime rubbish, shaking the pot frequently in order that the contents may settle down evenly. This shaking also fills up all vacancies and renders the soil firm.

TREATMENT AFTER THE FINAL SHIFT.—When the plants are all shifted the pots are set in a cold frame, the lights of which are kept closed, a little air being admitted only when the sun shines, and now and then a watering overhead to encourage healthy and vigorous growth. When the stem has risen some four or five inches high, the plants are conveyed to the greenhouse, or, if the cultivator possess one, to a late vinery, which is to be preferred, since fires are rarely used there. It suits well the constitution of the Pyramidal Bellflower to partake of the same shade, and to receive the same proper treatment of the vine in such a house; there it grows vigorously, and the stem rises vertically, in a robust and healthy condition, to its ultimate elevation; when it has gained this point, the amount of light to which it is exposed is augmented by degrees, by which means the strength of the stem is increased, the colour of the bloom is perfected, and all unfavourable circumstances being escaped, it at last commands the admiration of all who are capable of appreciating its beauty.

SOIL FOR C. PYRAMIDALIS.—This should be composed of one-third hotbed dung, well rotted and dry, passed through a coarse sieve; one-third turfy loam, which has been previously laid up for a year to dry and decompose; and one-third sand, all well mixed together. It also likes a good rich loam, but it will grow very well in common garden soil.

PLANTS FOR SUCCESSION.—When the Pyramidal Bellflower has once bloomed in a pot, it is then only fit for planting out in the borders, so that he who desires to have choice specimens every year must keep up a constant succession of young plants, by propagating a fresh supply every spring.

WATERING.—When in a growing state the plants need a liberal supply of water; plants which have once bloomed, though they never afterwards bloom so well again, are greatly benefited by the application of manure water.

WINTER TREATMENT.—Plunge the pots in sand or ashes in a frame, or in any situation where they can be kept dry.

TIME OF FLOWERING.—The Pyramidal Bellflower is a perennial; it blooms in its third year when raised from seed, and in its second when propagated by division of the root. It flowers in the months of July, August, and September.

THE CARPATHIAN CAMPANULA (*C. carpatica*), so called from its having been discovered on the Carpathian Alps, whence it was imported in 1774, is a very desirable species of this beautiful genus. It is a perennial and herbaceous plant, growing with great rapidity, and can be multiplied with much facility by division of the roots as well as propagated by seeds. It is an exceedingly ornamental species.

PROPAGATION BY SEED.—The seed may be purchased, but if you have a plant and wish to adopt this mode of increasing your number, you will allow the seed-pods to remain upon the plant until they are thoroughly ripe. Collect them and store them in a dry and moderately cool place, and early in the following April sow them in shallow pots or seed-pans. Set the pans in a hotbed; you will then have a number of plants which, with care, will bloom in the autumn.

DIVISION OF THE ROOT.—This operation should be performed in the beginning of the month of April, care being taken not to detach the roots from any of the offsets in the act of separation. They may be planted in pots, or in beds and borders. In beds they should be placed at from four to five inches apart, and in borders they have a good effect if arranged in patches of five plants. If they are supplied with good drainage and set in a rich compost, they will quickly cover the surface of the beds and yield a mass of beautiful blue flowers during the whole of the later months of summer and the early part of autumn. Their appearance is truly admirable, the branches, which grow to the length of from twelve to eighteen inches, bearing one terminal flower, with a corolla spreading wide, so as to display itself to the utmost. If you are not anxious to save the seed, you may extend the period of blooming by pinching off the seed-pods as they begin to form. It is a good plan to divide the root every spring, as the plant increases the number of its offsets so rapidly, that if the operation be neglected it assumes a slovenly appearance. There is also a white variety of this flower, *C. carpatica nivea*, which is a compact, neat, and somewhat dwarf herbaceous and hardy plant, growing to the height of nine or twelve inches, and displaying an abundance of clear white, open, bell-shaped flowers, somewhat more than an inch in diameter, from the middle of June to the latter part of August. It is well adapted to plant in patches or groups in a small select bed.

THE NOBLE BELLFLOWER (*C. nobilis*).—This is a fine hardy herbaceous plant. The radical leaves are deeply heart-shaped; they are of a pale but bright green, and are furnished with foot-stalks from six to nine inches in length, the whole forming a tuft of considerable size. From the midst of this tuft the flower-stem rises equal in length to the diameter of the tuft, or rather longer perhaps; the stem branches somewhat at its lower part, and displays upon its several divisions a number of slightly nodding flowers, which exceed in size those of all the species of this genus previously known. Those who know the *Canarina Campanula*, will observe a similarity in the two flowers. The flower is almost three inches long, and its diameter is about an inch and a half. The colour of the corolla externally is pale purple, and its surface nearly smooth; within, the purple hue is paler; the surface is marked with bright purple specks profusely scattered, and thickly clothed with long delicate hairs disposed horizontally. It shows a close affinity to the Canterbury Bell (*C. medium*), its flower-cup being furnished with reflexed appendages. The stigma, however, is trifid, which brings it in alliance with the Betony-leaved Campanula (*C. sarmatica*) and the Dotted-flowered Campanula (*C. punctata*); yet it is quite distinct from these different species, and is a desirable addition to the number of our handsome hardy herbaceous plants. The plant is of very free growth, especially when planted in rough sandy peat, which it delights in. During the spring months it requires, like most of its race, an abundant supply of water. It is easily multiplied by division of the roots.

THE HAIRY FRAGILE BELLFLOWER (*C. fragilis v. hirsuta*).—There is not perhaps any plant in the numerous species and varieties of the beautiful genus to which this belongs more deserving of our admiration than this; nevertheless, its cultivation is very much neglected, and, from the want of a feeling of interest, it is rarely seen in such a state of perfection as it is capable of attaining. Messrs. Hendersons, of Pine-apple Place, deserve special commendation for the care which they bestow in the cultivation of all plants which merit their regard, and it is truly gratifying to see the measure of success with which they have been rewarded, and in none perhaps more than in this plant. A specimen, in their possession, completely covered with its enchanting bloom a pot whose diameter was about eight inches, and the flowers were also displayed in abundant profusion on branches which were pendent over its sides. In habit this variety is compact and unusually dense, and throws out a considerable number of branches decked with flowers of large dimensions, which are unfolded more widely, and present a more star-like appearance than other Campanulas. Its bright green foliage and the pleasing softness of its blue flowers render it one of the neatest and most attractive ornaments of the greenhouse. Decandolle says that this plant is rarely found beyond 41° north latitude; that it is indigenous throughout the evergreen region of Italy, and even spreads itself into the lower woodland region, so far as the upper limits of the beech, or nearly so, that is, about three thousand feet above the sea level. It is found hanging over the face of limestone rocks, and in order to treat it so as to supply artificially the peculiar condition of its native situation, it should be grown in a very sunny part of the greenhouse, where it obtains little moisture, except while growing. The soil best adapted for it is a very open loam, with some leaf-mould, both being unsifted. It is well to mix therewith broken pieces of sandstone or limestone, as it is absolutely necessary that the soil be kept thoroughly drained. In the winter season it requires but little water, and should be placed in a very dry situation. An upper shelf in the greenhouse is the best position for it always, except when flowering. It can be propagated by cuttings of fresh shoots, taken off in spring and placed in a little bottom-heat.

LŒFLING'S BELLFLOWER, *(C. Lœflingii)*.—This is a beautiful little annual species of the Campanula. It grows wild in sandy situations in Portugal, also near Madrid, and in the country round about Mogador. Its height, when full grown, is about from six to nine inches. It requires a light, rich, sandy soil. The seeds must be sown either in March or August, and the same treatment is necessary as that needed by other half-hardy annuals. If sown in the autumn they are potted singly, and placed in a dry situation, where they will be free from frost during the winter.

Those which are sown in spring thrive best if kept in a cold frame, where they have a plentiful supply of air, since the young plants are extremely tender and liable to damp off. The former will bloom near the end of May, the latter about the middle of July. The plant continues a long time in bloom, and may be planted out in a warm and dry situation in the open border, when the danger arising from spring frost is over. This plant when in bloom forms a tangled mass of bells of the most delicate blue, with a tender foliage, reminding us of the texture of the fragile Ivy-leaved Bellflower, which inspired Miss Twamley's muse to sing

"It was a blest retreat where I did find
This modest gem:
The forest trees above were intertwined,
And, under them,
From an old ruined fountain, gurgled out
A small clear stream, that circled them about,

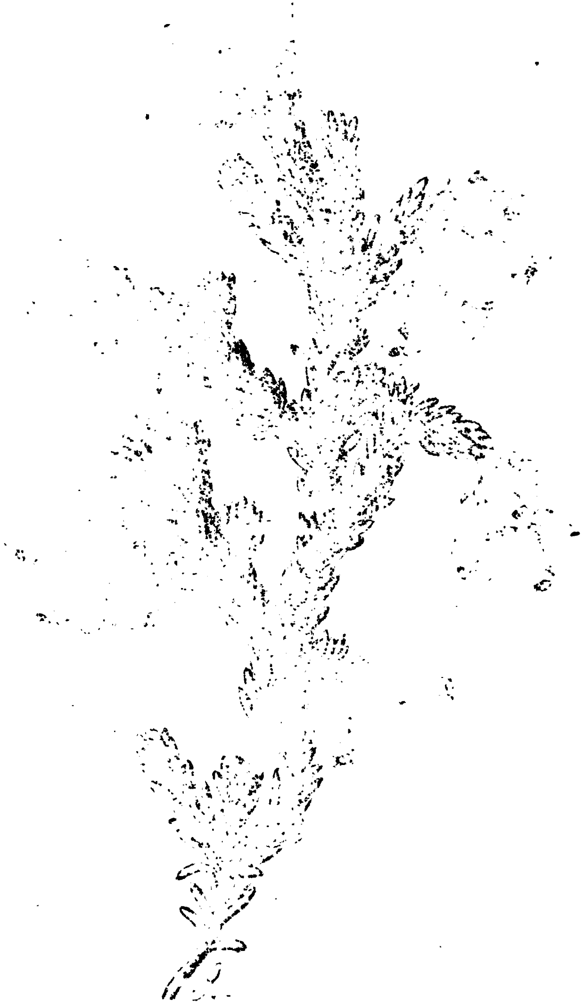
And rippling gently onwards through the wood,
Leaped into light
Beyond the last old gnarled oak that stood
Beside the bright
And sparkling rivulet, like hoary age
Smiling at the pursuits that youth engage.

Over the fount's damp, mossy stones there grew,
Luxuriantly,
These little bells of faint and tender blue,
Which gracefully
Bent their small heads in every breeze which strayed
From lawny sunshine to the woodland's shade.

And there they breed, and bloom, and close, and die,
In solitude.
Their lives are brief, but calm.—Alas! that I,
Not grief-subdued,
But innocently gay, as these small flowers,
In like retreat might pass my future hours!"

Lœfling's Bellflower well deserves a place in a greenhouse.

THE LARGE BELLFLOWER *(C. grandis)*.—This species was introduced amongst us by this name, being imported from St. Petersburg. In habit the plant is remarkably strong and robust. The flowers are displayed in a terminal spike, like those of *C. pyramidalis*, and they are generally two inches and a half in diameter. This plant suits well for pot cultivation, and may be placed in a cold frame throughout the winter, and in spring be turned out against a wall with a southern aspect; or, if preferred, it may be at all times kept in a pot and used for decorating the greenhouse. It may be multiplied by division of the roots in spring, or by cuttings, when plants of almost any magnitude may be procured to flower in the autumn. It is said to be a native of Natolia. The flowers are of a deep blue colour, of the form of *C. pyramidalis*. There are few hardy herbaceous plants so handsome. This may be treated as *C. pyramidalis*, and will amply repay all the care bestowed.



Erica Burnettii.

CAPE HEATHS.

OUR native Heaths, though few in number, are rich in beauty. As we pass along the wide moors which are scattered over England, we are struck with admiration by the appearance of the great mass of flowers which beautify their surface. The prevailing flesh-coloured tint of the bloom gives a warm hue to the whole, but on examination we find the flowers much varied. Some are almost purple, while others are roseate, and others are nearly white. Their forms, too, vary, although closely resembling each other, so that the flowers present a great variety of charms. Carrington, who sung the beauties of Dartmoor, thus addresses the Heath :—

"On my path
Profusely springs Erica. Pensive plant!
On thee with no kind glance the peasant's eye
Descends; he sees no loveliness in all
Thy summer vesture, and his arm is strong
To dash thy blossoms to the earth and wrench
Thy root tenacious from its parent soil.
Yet, though the unsparing cultivator's hand
Crushes the lowly flow'rets of the moor,
How many a vagrant wing light waves around
Thy purplê bells, Erica. 'Tis from thee
The hermit-birds, that love the desert, find
Shelter and food. Nor these alone delight
In the fresh heath—thy gallant mountaineers,
Auld Scotia, smile to see it spread immense
O'er their uncultur'd hills; and at the close

Of the keen boreal day, th' undaunted race
Contented on the rude Erica sink
To balmy sleep. O ye, on beds of down,
Who rest so delicately that ye feel
Pain from the doubling rose-leaf, like the old
Luxurious Sybarite; not half so soft,
So deep, steals courted slumber on your eyes,
As all unsought, unwoo'd, it drops at once
On the rude highland pillow of the North."

Carrington, in his notes, tells us that the Heath is in the way of the reclamation of the moor, being difficult of eradication. He admits, however, its usefulness as affording fuel to the inhabitants of the moor, and, when thoroughly decayed, as becoming a soil exceedingly favourable to the growth of vegetables generally; we may add, to none is it more favourable than to the Cape Heaths. Miss Twamley fancies the exotics proud of their crystal palaces, and imagines the hardy Heath of our moors jeering them about their tenderness; she might have said also that without the ashes of their ancestors the Cape Heaths would not have bloomed so beautifully in their adopted country, for the decayed flowers, leaves, and stems of the British Heaths furnish the favourite and best nourishment for their foreign rivals.

The Cape Heaths were scarcely known to us until the latter part of the last century, now we possess a large number of species, but yet there are numerous species, supposed to be still more beautiful than those we possess, still to be procured. They are a tribe of plants of great value, since they not only continue in bloom for a long time, but nearly, if not all the year round there are species displaying their beauties, so that at no season is the conservatory deprived of the presence of some of the family. To describe any of them here in particular would be to bestow notice upon a few, while numerous others of equal beauty and attraction would be left unnoticed, and to give a description of the finest would occupy more space than is allotted to the whole of this little *brochure.* We would recommend each of our readers to begin the cultivation of the tribe, if practicable, with a few specimens, and as they become better acquainted with their treatment by experience to add to their collection.

PROPAGATION.—This lovely tribe of plants is propagated by two methods, namely, by sowing the seeds or by striking cuttings.

BY SEEDS.—Seeds of the Heath are sown at different times by different floriculturists. Those which are gathered from plants which have flowered in England are by some sown as soon as they are ripe, by others they are dried and stored away in a suitable place in paper until the ensuing spring, which seems more in accordance with the ordinary operations of nature. Seeds which are procured from the Cape of Good Hope, the native country of the great mass of exotic Heaths, are generally sown immediately on their receipt, though, should the period of their arrival be late in autumn, or in winter, they are frequently carefully laid aside till spring; for it has been found by experience that when sown too late the seeds will decay and not germinate at all, and if they do germinate, and the tender plants make their appearance, they are sickly, and from the want of light and the superabundance of moisture in the atmosphere they not seldom droop and die.

Early spring, then, is a more favourable time for sowing seeds of the Heaths than the autumn of the year; for they not only have every advantage of longer continued periods of light, but brighter and warmer days, so that the young plants are free from the injurious effects of a dull and damp atmosphere, and have time during the summer months to grow and become vigorous before winter arrives.

Having determined to sow, and procured the seeds, the next step is to provide as many seed-pans or flat pots as may be required. In these put a quantity of small potsherds so as to fill up one-half of their depth, and upon the potsherds spread a stratum of turfy peat, so that the soil may not be washed down into the drainage, so as to choke up the passage for superfluous water. Upon the turfy peat spread a layer of fine peat-earth, lightly pressing it down with the hand, or with a flower-pot, so as to render the soil firm and to level the surface. When this is completed, the surface of the soil in which the seeds are to be sown should be about half an inch from the rim of the pot. The peat having been made thus firm, by which means the seeds are prevented from sinking too deep and being thus lost, the seeds are sown upon the level surface, and then slightly covered with fine peat and watered.

The seed-pans are then placed in a house prepared for the purpose, or may be set in a frame. Warmth and moisture are the necessary conditions to stimulate seeds into germination and growth, and wherever placed, the pans must be screened from the sun's rays, which would cause such an amount of evaporation as would probably destroy the seedlings. At the same time an excess of moisture must be guarded against, or the tender seedlings will damp off. Assuming that the seed retained the vital principle in full energy, and that the preceding cautions have been observed, we may reasonably expect the young plants to thrive, when, as their strength increases, the shading may be gradually lessened, and at length discontinued, and by degrees more air be admitted to them, until they are ready to be transplanted.

AFTER-TREATMENT OF SEEDLINGS.—If the seed has been sown early in the spring, the plants will be ready to pot off before the end of the summer; but if sown much later in the year, they will probably be too weak for it to be safe to remove them, in which case it is better to let them remain in their seed-pans until the following spring, the pans being placed upon a light cool shelf in the greenhouse. If, however, the young plants are healthy, and have been sufficiently hardened by a free admission of air, they may be removed singly into thumb-pots. Sufficient drainage being first provided, the pots may then be filled with sandy peat, in which the plants are to be carefully planted. They must then be well watered, and the pots set in a close and shaded frame. In the course of ten days or a fortnight the roots will have become accustomed to their new locality, which the plants will indicate by their fresh appearance and disposition to grow, when the air may be admitted more freely by degrees, and the plants will soon become fit to bear the same treatment as those which are fully established.

BY CUTTINGS.—Cuttings of Heaths will readily form roots if the wood be duly ripe. Heaths vary much as to their period of blooming, and consequently the shoots of different species are, at the same time, in different stages of growth, whence it is not practicable to prescribe the exact time for striking cuttings. Experience, therefore, is the only instructor that can be relied on in this point; but if judgment be exercised and healthy plants be selected from which to take the cuttings, there is great probability of success even to the novice. Some propagators make choice of spring for the operation, others are equally successful in the middle of summer, and others again succeed perfectly in August and September. The short side-shoots, issuing direct from the old wood, are deemed the most desirable. The shoot must be nearly ripe, that is, firm, for if it be young and green the cutting will be certain to damp off; on the other hand, if that part of the shoot from which new roots are expected to be emitted be too hard and woody, it will not put out any roots. The former result is soon perceived, but the latter not so readily, for the cuttings show signs of life for months, yet on examination are found to have no root, but have had their existence sustained by absorbing moisture from the soil in which they were inserted. It is considered by some propagators as a sign of the fitness of the shoot for a cutting, if the leaves, which are to be removed from the base of the cutting, come off clean, without tearing the bark, when stripped. Having made choice of such sorts as seem suitable, strip off, or cut off with a very sharp knife or a thin-bladed pair of scissors, the leaves from the lower part of the cutting to about one-half of its length, then with an extremely sharp knife cut clean off the base of the cutting, either horizontally or diagonally; by the latter direction of the knife there is perhaps less danger of injuring the tissues. If the cuttings be taken from shoots out of old wood, the nearer the base of the cutting is to its union with the parent plant the better.

The size of the cuttings will necessarily depend upon the habit of the species from which they are obtained. From some strong-growing kinds cuttings may be got between one and two inches long, while from the more delicate they may be scarcely half an inch in length. If it be intended to strike various sorts in the same pot, it is desirable, if not necessary, to make choice of shoots from plants of similar habit.

In preparing the pots for the reception of the cuttings, put in a quantity of small potsherds, so as to fill up about two-thirds of their depth, and upon them spread a thin layer of turfy peat, which will prevent the sand from being washed down among the draining materials so as to stop up the interstices. Over this lay a quantity of pure white sand; make the surface level and press down the sand firmly, and let it be freely watered. This done, with a small dibble make a little hole for the reception of each cutting, which should be inserted with care, so as not to injure the base, not deeply, but just so far as to keep the cutting firm in its position. Then water them again so that the sand may be carried close around the inserted part of the cutting. Having completed the operation, bell-glasses may or may not be placed over them; if not, the pots should be placed in a close part of a stove, in such a position that the sun will not shine upon them except at its rising or near its setting. If used, set the pots in a cool and shady place, wipe the glasses dry with a cloth once or twice a day, and water as often; it is sometimes well, if the weather be dull, to leave the glasses off for a short time after watering. A little heat, applied as bottom-heat, about a month after planting the cuttings, may be beneficial, but much would be decidedly injurious.

The diversity of habit, in respect of rapidity of growth, is very great in these plants; the consequence is that cuttings of some species will not form their roots in less than five or six months, while others will do so in the same number of weeks. A good deal of the success will depend upon the water used. Rain or river water is good, but spring water is generally found to be productive of mischief.

AFTER-TREATMENT OF CUTTINGS.—When the cuttings have made their roots, air must be admitted to them more and more, according to the temperature and humidity of the atmosphere, until they are hardened so as to be able to bear removal. When this condition is attained, each rooted cutting must be placed singly in a thumb-pot filled with sandy heath-mould. In the transfer great care must be exercised lest the tender rootlets sustain injury, for these rootlets are most susceptible, and the accidental removal of any portion of them is likely to check the plant most seriously. As soon as potted place the pots in a cool and shady frame, protecting them from the burning rays of the sun, and from the prejudicial influence of a superabundance of moisture.

Shifting Plants.—As the young plants, whether raised from seed or procured by cuttings, grow in size, the pots will of course be filled with roots, and when this is their condition they must be shifted. We have already spoken of their removal into thumb-pots, and the general rule for shifting is to follow the sizes of the pots, as usually made, from thumbs to sixties, from sixties to forty-eights, down to the larger pots. Of course the same attention is necessary, at every shift, to provide ample drainage, a layer of turf or moss, to prevent the soil from washing down to choke up the spaces between it, and to avoid doing any injury to the rootlets, which become more tender as the plant advances in age and bulk.

The operation of shifting may be performed at any season other than winter. The time, however, will depend very much on the habit of each species or variety. The season of spring appears to be the best, because then we may assume that the vigorous growth of the majority begins, and if they are set out of doors during the summer months, they will need examination again before being put back into the house, and such as require it must be repotted.

POTTING.—We have already remarked the importance of good drainage in the cultivation of Heaths, and we may here state that if the pots used are deep, one-third of their depth may be filled up with draining materials. First place at the bottom a layer of potsherds, and over these a stratum of large pebbles or pieces of broken brick, and a third layer, of still smaller pieces, and upon them spread a quantity of fibrous turfy peat or moss; the latter is to be preferred in the case of large plants, and also where there is reason to fear that through neglect or accident the plants may be deprived of their usual supply of water longer than desirable at any time, because moss is well known to have the property of readily absorbing water, but of parting with it slowly, so that the layer of it is a means of keeping moisture in reserve for the plant in any unlooked-for drought. Potting or shifting plants should be done as early in the year as practicable, because it is desirable to place the plants in the best possible condition for their making roots during the most favourable season of the year. An unhealthy plant will not of course be clad with the most healthy foliage, nor will its bloom open out with all its proper beauty, and upon the state of the roots will depend the state of the plant.

If a plant requires to be repotted, the ball of rootlets will exhibit on the outside a quantity of fine fibres, of hair-like tenuity, intimately interwoven, and the whole being a solid mass. The ball of rootlets must be carefully loosened ere the plant is placed in its new locality, and the portion of soil which remains attached to them must be thoroughly saturated with moisture; it may then be planted and watered, and for a few days afterwards must be shaded from the direct rays of the sun.

REPOTTING.—In repotting Heaths, if possible, the operation should not be done immediately after pruning; but supposing it to be practicable, wait until growth has recommenced. This is very important, because in repotting it is not possible to avoid mutilating the rootlets more or less, and if both the branches and the roots also be pruned, as it were, at the same time, the plant must sustain considerable injury, or at least its growth must be much checked.

SOIL FOR HEATHS.—The turfy peat, of a deep rich brown colour, which is found in such abundance on the extensive commons where native Heaths flourish luxuriantly, is admitted to be that best adapted to the constitution of their foreign relations. The soil, no doubt, is the decayed leaves and flowers, and perished stems, which have fallen around the plants through successive years, and by the continued decomposing action of moisture and cold and heat have been reduced to a fine vegetable mould, with which there is usually incorporated a liberal supply of sand. The surface of the soil of such commons should be pared off, about six inches thick, together with the wild Heath plants growing therein, and carted home, where, being first exposed to a shower or two, it should be put in a shed, and then during the winter and spring months be frequently turned over, so that every part of the mass may be successively exposed to the action of frost, by which means it will be reduced into a uniform friable condition, and made an admirable soil for exotic Heaths. If it does not contain a sufficiency of sand, more must be added.

It is to be observed that the soil should not be reduced to a state of great fineness nor sifted, but broken up roughly, the fibrous matter found mixed with it being retained; that which contains much fibre is indeed to be preferred. When the soil is extremely fine it is apt to become matted so closely that water will not pass through it, a condition fatal to large numbers of Heaths. The retention of fibrous matter and the admixture of broken porous stones go far towards remedying the evil. The soil, by their presence, is kept more constantly open, while they hold moisture in reserve should drought arise from any accidental or other cause.

SUMMER TREATMENT.—Heaths in a state of healthy growth require to be placed out of doors during summer. They need a cool and airy situation, and much care is necessary in screening them from the sun during at least five hours in the middle of the day. If this object can be accomplished by placing them under the shade of trees it is desirable; but if not, some other means must be provided. Much attention also is needed to prevent drought. Some provide a shelf boarded on both sides and at the end, place the pots upon it, and fill the spaces between with ashes, which are sprinkled from time to time, so as to replace moisture lost by evaporation; others use moss instead of ashes; and, again, others place each pot in another so much larger as to allow a quantity of moss to be placed all round between the two pots. It is of no consequence which method be adopted, if the same result be attained, namely, the prevention of such an amount of evaporation as would destroy the plant through lack of moisture.

WATERING.—Heaths are very impatient of drought, and, unfortunately for the inexperienced, they give no indications of their need of moisture; hence they require regular supplies of water, which can hardly be given too abundantly, provided the drainage is perfect, since all that they do not need will flow rapidly away. Mr. Macnab adopted the practice of mixing with the soil for large pots pieces of freestone, which, on account of its porosity, is thought to be of great use, should the ball be in danger of being too dry, by its retention of water. In winter, when a frosty condition of the atmosphere might be injurious, it is safest to water Heaths in the early part of the day; and at such times to keep the soil as dry as prudence will permit, because its liability to freeze is in proportion to the moisture it contains.

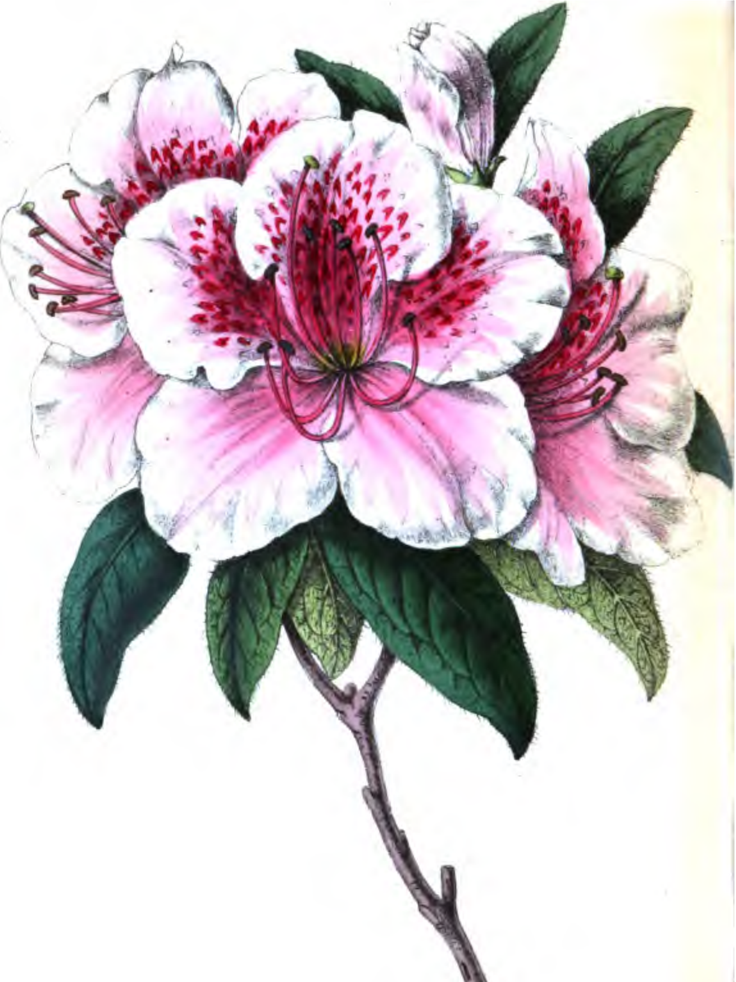
SPECIMEN PLANTS.—The chief art in procuring show specimens of the Heath is to keep them in a dwarf state, by which they become round bushes covered with verdure, and ultimately with flowers. This may be effected by pinching out the points of the shoots when young, and continuing to do the same upon any branches which evince a tendency to grow too long. The time for performing these operations is after the flowering season, or before the plants have formed their flower-buds.

MILDEW.—This shows itself generally on young wood, which has been formed too late in the year to ripen well before winter; whence the importance of encouraging their vigorous growth early in the season. They should then be put in a dry situation, so that the young wood may ripen thoroughly, and thus be better able to withstand the evil influences of the dull winter months. Mildew may be destroyed by sulphur, and the best plan of applying it is to provide a solution in the following manner:—Take a little sulphur vivum and tie it in a small bag, and put it in a saucepan full of water. Boil the water for some time, then let the water cool, and in that state syringe the plants with it. Mildew is said to be produced by damp and bad ventilation.

ERICA BURNETTII.—Such is the name of the beautiful variety which is portrayed on our frontispiece. It is, we are informed, a hybrid, having for its parents *E. hyemalis* and Hartnell's Heath. The flowers resemble in colour those of *E. elegantissima*, but this is quite distinct from that variety in habit and foliage; Burnet's Heath has very fine small foliage and grows freely. Its general appearance reminds us of *E. hyemalis*, but the shrub is closer and more compact. The green hue of the foliage is deeper, and the shoots are stiffer; it has also the valuable property of flowering very early in autumn, beginning to show its bloom in September, and continuing until the following January.

The culture which is adapted for *E. ventricosa* or *E. hyemalis* is also suitable for this variety; it will flower freely in forty-eight-sized pots; all the side shoots produce from three to five flowers in the manner of *E. hyemalis.* The colour of the flower is deep rose with white tips. The surface of the tubes is glossy, and the tubes are stouter than those of *E. hyemalis.*

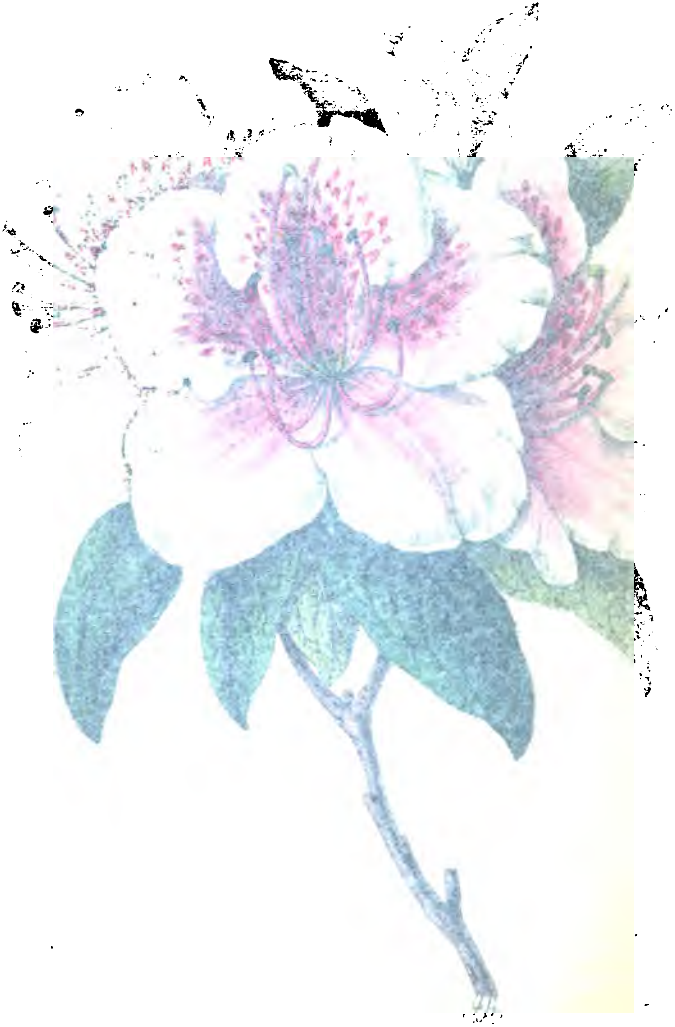
Watering and free circulation of air are very essential to Heaths, when the weather is in any degree favourable, whether they be kept in a house or a frame. Many persons have observed that Ericas must have a house, as they require heat; but this is plainly a mistake, as no tribe of plants suffers more from a dry artificial heat than they do. It is indeed desirable to remove the lights from frames and houses when practicable, and when the weather is mild and genial; at the same time it would be extremely injudicious to expose them fully to cold dry easterly winds, or the scorching rays of the summer sun.



Azalea Indica
Var. Criterion

THE CHINESE AZALEA.

THIS beautiful native of the East is deservedly one of the greatest favourites in the greenhouse and conservatory during the period of its blooming. It is in fact one of their most ornamental denizens from the end of January to the beginning of June. It was first imported into England in 1808. [illegible] new species have since been added to our collections, and by hybridization a large number of varieties [illegible] exquisite beauty have been brought into existence. The abundance of their flowers is a feature in the habit of these plants which renders them exceedingly attractive, and wins the admiration of all who love the rich exotics which enterprise has obtained for us. To those who take delight in the cultivation of flowers, and are happy in the possession of a small stove and greenhouse, there is nothing in the cultivation of this fine genus which need discourage the amateur from undertaking their management. A failure in some cases only stimulates to renewed exertions, and the final reward is the possession of beautiful flowering plants.



Azalea Indica.

Var. [illegible]

THE CHINESE AZALEA.

This beautiful native of the East is deservedly one of the greatest favourites in the greenhouse and conservatory during the period of its blooming. It is in fact one of their most ornamental denizens from the end of January to the beginning of July. It was first imported into England in 1808, and several new species have since been added to our collections, and by hybridization a large number of varieties of exquisite beauty have been brought into cultivation. The abundance of their flowers is a feature in the habit of these plants which renders them exceedingly attractive, and wins the admiration of all who love the rich exotics which enterprise has obtained for us. To those who take delight in the cultivation of flowers, and are happy in the possession of a small stove and greenhouse, there is nothing in the cultivation of this fine genus which need discourage the amateur from undertaking their management. A failure in some cases only stimulates to renewed exertions, and the final reward is the possession of beautiful flowering plants.

PROPAGATION.—There are four modes of propagating the Azalea, namely, by seed, to procure new varieties, by cuttings, and by grafting and inarching.

BY SEED.—The seed of the Indian Azalea is ripe in February, and should be sown about the beginning of March. Furnish the pots with good drainage, and fill them, to within half an inch of the top, with a mixture of peat earth and silver sand, in which the latter should be most abundant. Press down the surface with the bottom of another pot, to make it firm and even; water it slightly; then sow the seeds, which are very small, regularly and also thinly upon the surface. Let them be gently pressed down so as to become fixed, and scatter over them a little peat, or a small quantity of white sand, and again be pressed, so that after watering them once more the seeds may remain buried. The sand helps to prevent dampness, which is very likely to attack the young seedlings, especially when stimulated into germination by artificial heat; and as a preventive, it is well to have a potful of sand on the fireplace, so that hot sand may be always in readiness, and when the tender plants appear, a little hot sand may be sprinkled among them now and then, should there be any symptoms of dampness. It is a good plan to place the pots, immediately on the seed being sown, on a shelf in the greenhouse, shading them from the direct rays of the sun. Some cultivators think it best to let the seeds germinate under the gradually increasing heat of the spring, than to stimulate them artificially, as they then come up stronger, and are less likely to damp off. When the seedlings have made two or three leaves they will bear handling, and may be pricked out into other pots with fresh soil, made of equal parts of sand and peat. As their growth progresses, they may be potted in thumbs or small sixties, in which they may be allowed to remain all the winter. The pots should be half filled with rough drainage, for which purpose coarse coal ashes answer well. Their subsequent treatment will be the same as cuttings.

BY CUTTINGS.—This is the more common and perhaps the most expeditious way of raising young plants. This operation should be performed when the wood is not quite half ripe. In some cases this may be as early as May, when there are shoots about an inch and a half long; in others, it may not have attained the requisite degree of ripeness until July or August. But at whatever period the work is done, the pots in which it is intended to strike the cuttings should be half filled with broken potsherds, covering these with a thin stratum of coarse, rough peat, by the intervention of which the smaller particles of the finer soil are prevented from being washed down, and thus filling up the spaces between the sherds. The experience of different growers induces some to think that cuttings most readily strike in a soil composed of equal portions of peat and sand, while others prefer a mixture of two-thirds peat and one-third sand, sifted through a fine sieve. Fill the pots with one of these, using the latter if the atmosphere be comparatively dry, to within about a quarter of an inch of the rim. Press the soil gently with the bottom of a pot or saucer, and then fill the pot up entirely with silver sand, and water lightly from a watering-pot with a very fine rose. The cuttings being prepared, insert them in the soil and cover them with a bell-glass; then plunge the pots into a bed of tan, having a bottom heat ranging from 60° to 70°. The cuttings may be about an inch and a half long, a little more or less is of no consequence. The cuttings having been duly set, and the pots plunged, the former will be found to have made their roots in the course of six or eight weeks. At this time a little air should be admitted under the glass by raising it on one side, and supporting it in that position by means of a piece of wood. A week later they will be ready to remove to the greenhouse, where they may remain until the middle of February, when it is desirable to plant them in thumb-pots, in peat and sand mixed. A little bottom heat may then be supplied, by setting the pots in a hotbed of near 60°, where after remaining three or four weeks, they may be transferred for a while to the front of a warm house. In the early part of May the young plants may be again shifted into three-inch pots, using the same mixture of peat and sand, pressing the soil compactly round the ball of the plant. Place them in a cold pit at this stage, and keep them there for eight or ten days quite close, taking care to screen them from the direct burning rays of the sun until thoroughly established. Then admit air and light gradually; examine your plants, and stop such branches as need it. The young plants are benefited by shading throughout the summer, until their growth is completed; after which, all the light they can have may be given to promote the ripening of the wood. No further shifting will be needed before the ensuing spring, when they may be moved once or twice, when the plants are thought equal to the shock. In the middle of June following, if they have thrived well, another shift will improve them; and if the operations have been carefully and successfully performed, the plants will be in fine flowering condition in five or six-inch pots in the succeeding spring. As plants become older, they will bloom more freely if a little loam be added to the soil, in the proportion of about one-sixth of the whole, the remainder being peat, with a quantity of sand to keep it porous.

At whatever part of the spring or summer the operation of striking cuttings is performed, care should be taken to select them from those plants which are in the full vigour of their growth, for then, as may be supposed, the cuttings partaking of the vigour of the parent shrub from which they have been taken, will more quickly throw out roots than they would at a time when the juices are thickened and inactive.

BY GRAFTING.—Azalea cuttings generally root freely, but it is found that some thrive better by being grafted. Though the more tender kinds do well when growing on their own stocks, yet since they do better, and yield flowers of twice the magnitude, by being grafted on those of hardier kinds, it is well worth the labour of performing the operation. The more delicate kinds are greatly improved by this mode of propagation, and for a stock the *Azalea phœnicia* is the best, as it grows strongly and freely. Grafting may be done at any time when the wood is ripe, and perhaps July and August will be the best The stock may be a year old; the scion should be from a well-ripened shoot, and about an inch and a half in length. An incision must be made in the stock, a quarter of an inch long or thereabouts, and the scion must be cut so as to fit it; if it should touch the bark on both sides it will be the better. The graft must be bound to the stock by a ligature of matting or worsted, the latter being preferable to tie small scions, not cutting the stock so much when it swells. The smaller the incision at the point where the stock and scion meet, the sooner will the union be effected. When the scions are secured to the stocks, plunge the pots containing the grafted plants into a bed of ashes or old tan, in a warm house, and cover them with a hand-light. The glass must be removed every third or fourth day, so that any moisture which may have adhered to the graft may be evaporated. In the course of three or four weeks, the union of the stock and scion will be perfected, and then the light should be propped up a little on one side to admit air. The hand-light may be taken away a week later, and the plants moved to the front of a close house, and be lightly syringed now and then overhead. If the stock emits any buds, these must be rubbed off as soon as detected, since by their growth they deprive the grafted shoot of nourishment. It is found that if the grafting be done so late as August the scion shows but little vitality before Christmas, at which season it is well to re-pot the plants so as to give them room, by which they will be stimulated into growth; at the same time the grafts should be examined, and care taken that the ligatures be not too tightly bound. When the graft begins to swell, the ligature may be loosened, but not removed too hastily, because the graft has a tendency to grow itself off.

In the operation of grafting, it is well not to cut away the head of the stock until the graft has grown considerably, for otherwise the roots of the stock are injured by the system being too small to relieve the roots of the food it has absorbed; the effect is sometimes indeed fatal to the plant. The future treatment of grafted Azaleas is the same as that applied to those grown on their own stocks.

BY INARCHING.—This is a species of grafting; the difference being in applying the scion to the intended stock without separating it, in the first instance, from its own parent plant. The plant which is to form the stock, and that from which the scion is to be derived, are placed in juxtaposition, and if one be taller than the other, the pot containing the shortest is raised by artificial means, so that the points at which the stock and scion are to be united may be easily brought into close contact. Then, if the two branches to be united are of the same circumference, each is gently bent, and a sharp thin knife passed into the bark, through the centre of the branch, cutting away the segment of a circle, so that the cut side of the branch, when bent, shows a long oval wound. These two oval spaces, in equal-sized branches, should exactly correspond in size. If one branch be smaller than the other, the smaller should be first prepared, and then a corresponding piece should be removed from the larger, so neatly and carefully, that the one should exactly coincide with the other when brought into immediate contact. If this cannot be so dexterously performed, then care must be taken that on one side of the cut at least the bark of the scion touches the bark of the stock. Thus prepared, they are bound together, and the scion begins to draw nutriment from both parents, until, in the course of a few weeks, the two plants are as perfectly joined as the Siamese twins. The scion may now be separated. The branch of the scion's parent plant is cut below its junction with the stock, and the branch of the stock to which it is joined is cut off above the junction. The scion now derives all its food from the adopted parent, which is still allowed to retain the other branches of its family, until the demands of the scion upon the roots are sufficiently great to allow of their removal without endangering life from repletion. When the two plants are supposed to be growing unequally, it is well to cut an indentation upwards in one, and downwards in the other; the former generally in the stock, the latter in the scion, which commonly is growing the quickest of the two, each one corresponding with the other.

TREATMENT OF THE AZALEA DURING GROWTH.—So soon as the Azalea has ceased to bloom, its free growth begins. At this time the plants require to be repotted, the flower-stems being removed, to prevent the plant from wasting its strength in the production and perfection of seeds. The Azalea thrives extremely well in a soil consisting of three-fourths heath-mould' containing a large portion of vegetable matter, the remaining one-fourth being sand and sandy loam in equal quantities.

Some of the Azaleas are neither deciduous nor evergreen, and have been called semi-evergreen; while others are undoubtedly deciduous. This difference of habit requires a distinction to be made in the choice of pots, and also in the extent of drainage. The semi-evergreen, or semi-deciduous, require larger pots and more drainage than the deciduous.

In potting the Azalea, considerable care must be taken in the arrangement of the roots, which are singularly fine and hair-like. They must be so disposed that the spongioles may be spread in every direction, so as to absorb from the soil all the nutriment which it contains. The drainage must be ample, regard being had, as already stated, to the different habits of the species.

The Azalea being a native of a hot climate, it naturally requires great heat when making its annual growth. To ensure the greatest annual accretion, all the available heat of the sun, together with an atmosphere rendered duly moist by artificial contrivances, as by the use of the syringe both morning and evening, are needful. When grown to the full limit, a more free admission of air is necessary, and also a reduction of the temperature, so as to inure the plants to bear exposure to the summer climate of our island; before which they may be put in a cool greenhouse, or placed in a deep pit, until the wood is fully ripened. This will probably be about the middle of July, when they may be placed in a border with an east or a west aspect, where they will be safe from the drippings of trees and the blighting influence of cold winds. There they may continue until September, by which time the flower-buds will be formed, and then it will be necessary to remove the plants to a greenhouse or close vinery, where they are to remain during the winter, air being given them when the weather is dry and mild. At this time great judgment must be exercised in the supply of moisture, much less water being given to those which are deciduous, than to those which only partially shed their leaves. As the flower-buds begin to swell, and to show signs of expanding, then air and moisture must be supplied more liberally.

TREATMENT AFTER FLOWERING.—As already said, the Azalea requires to be repotted immediately when the bloom has faded. For this purpose take as many flower-pots as you have plants, each of a size larger than those your plants are respectively growing in, and not forgetting to supply good drainage; prepare them by filling them with peat of a coarse kind, mixed with a little silver sand. Remove your plants into these, and give them a good supply of water. The plants should then be treated as just directed, or they may be kept altogether in the greenhouse, if well exposed to light. Whether in-doors or out, care must be taken that they are furnished with sufficient moisture, so as to prevent their flagging; while, in order to encourage them to ripen their wood, it is equally necessary to avoid giving it in excess.

TO FORCE THE AZALEA.—In order to force this beautiful flower effectually, the plants must be put in training early in the spring of the year preceding that in which the effect is to be produced. This is accomplished by starting them into growth early, and by keeping them in a warm and moderately moist atmosphere, giving them an abundant supply of water while they are growing. The year's growth should be attained between the middle of July and the middle of August, depending much upon the climate in which they happen to be. Then by degrees they may be hardened, so as to bear being placed out of doors for a month, in a sunny and open situation; though some growers deprecate this plan altogether. Here they will ripen their wood, the supply of heat and moisture being diminished; sufficient water only being administered to avoid drought. Before frosts appear, the plants are to be removed from their position into a greenhouse of agreeable temperature.

From those which have been thus treated, the plants which have the most plump flower-buds should be selected, and transferred to a part of the stove which is both warm and light. Here the temperature in the day should range between 60° and 70°, and at night from 50° to 55°. Any erection in which these degrees of heat can be maintained will effect the required object, provided also that the air be somewhat moist. A little bottom heat may also be applied with advantage, and this should be from 70° to 75°. It is found that in thus forcing the Azalea, it is desirable not to give the roots too much room, as if rather potbound they are thought to succeed better.

Choice of Plants.—In making choice of Azaleas, it is better to select those which are young and healthy, rather than large plants, even if these last can be procured. The genus is indeed so much admired, that it is not easy to obtain large specimens of new varieties.

Specimen Plants.—Early in the month of March, those Azaleas which it is desired to grow as specimens must be placed in a house, the temperature of which is from 50° to 55°. This degree of heat will soon stimulate the plants into growth. If at this time they happen to be in sixty or forty-eight-sized pots, they may be shifted into larger sizes, but shifting is more beneficially performed when the plants are growing. If shifted, they will need shading for a few days, and when shut up for the night, they must be lightly syringed. Several varieties of the Azalea throw up three or four stems; the strongest stem should be made choice of as a leader, and the rest must be stopped at various lengths, for the purpose of keeping the plant bushy below. If the leader shows a tendency to grow to a great length without throwing out any lateral branches, that also must be stopped, which will force it to put forth branches. While growing, they must have abundance of air and light, and care should be taken that they are not subjected to a current of cold air, which is so commonly detrimental to young plants in early spring, when we have generally a bright sun, together with cold east and north-east winds. As these plants require to be managed so as to extend their growth to as late a period in the autumn as the weather will allow without the application of fire heat, and as the formation of flower-buds is undesirable at this preparatory stage, the plants which need room in the pots must be shifted at the latter end of July. They must not be over-potted, and ample drainage must be provided. In potting, the collar of the stem must be raised considerably, by rounding the upper side of the ball, care being taken not to damage the delicate and tender fibres. During winter, let the plants be set at the back of the greenhouse, as near as practicable to the glass, so as to ripen the wood.

In the second year the plants should be subjected to the same treatment, being shifted into larger pots early in March. Towards the end of July they may be placed out of doors, where they may have the afternoon sun, and be free from winds and the drip of trees. At this time the plants will be large enough to bloom, and will have formed their flower-buds in September. While they are out of doors they should be now and then syringed overhead, in extremely dry weather, and the soil about them be often disturbed and watered. They must be put in a house before frosts come on, and where practicable, it is better if they have a house to themselves.

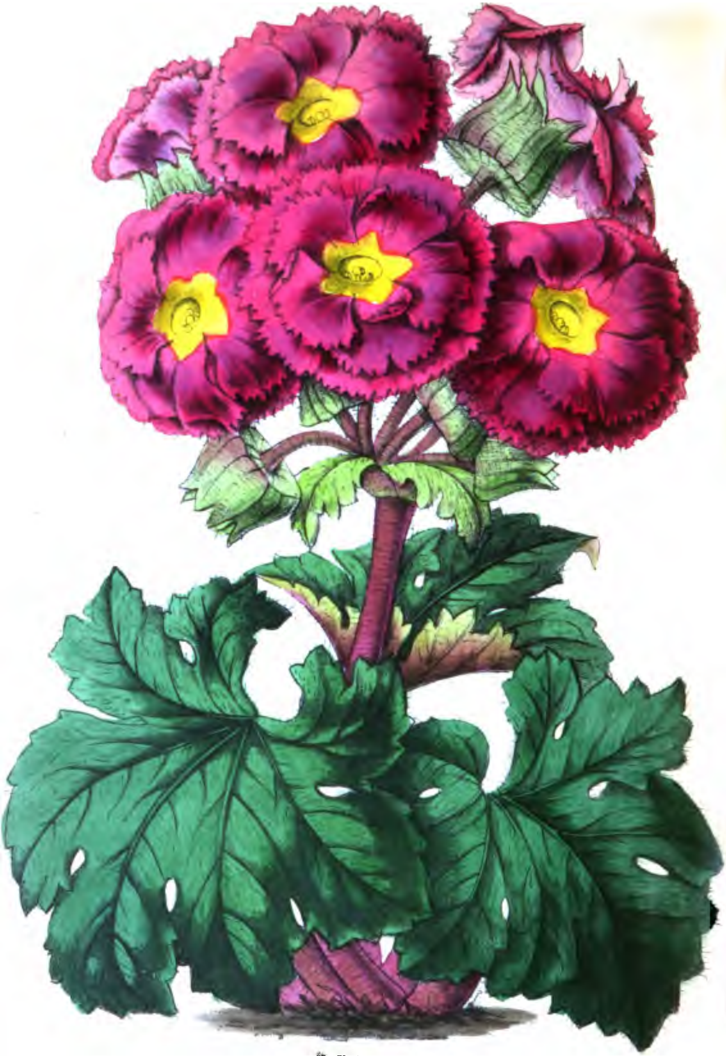
Near the middle of December some of the varieties may be removed to a forcing-house, and subjected to a temperature of from 50° to 65°; these will show for bloom towards the end of January, when they may be transferred to the conservatory or the greenhouse. Here their brilliant blossoms will yield gratification to the eye, and, if the weather be mild, they will emit an agreeable fragrance. About a week before the first have unfolded their buds, a few more should be subjected to the same treatment, those plants which show by the size of their buds their more ready susceptibility to excitement being selected. Regard should be had also to making choice of such as being different in colour will produce a better effect in the conservatory. This succession should be kept up month by month, until the buds expand in the cool house, when they may all be subjected to heat, by which the flowers will be larger, the colours brighter, and the perfume more powerful.

Soil for the Azalea.—The best is a peaty earth collected from commons where heath is abundant, of a light and fibrous character, containing a considerable amount of sand. The surface must be pared off about three or four inches thick, and the turves be spread out bottom upwards, and exposed to the sun during summer. After a few showers of rain have fallen upon the peat to give it some degree of moisture, it may be thrown up into narrow ridges in the autumn; it can then be taken to the potting-shed as wanted. When used, it should be broken up with a trowel, and not sifted, but the undecayed surface must be rejected. To three-fourths of peat add one-eighth each of loam and silver sand, for the stronger-growing kinds.

Insects.—The humble bee is a great despoiler of the beauty of the Azalea, and must therefore be guarded against. Every blossom in which it inserts its proboscis will fall off in a few hours afterwards. It is also subject to be attacked by thrips. The best means of destroying these troublesome insects is by strong fumigations of tobacco two or three times a day, during two alternate days.

TREATMENT OF THE AZALEA, *as practised by Messrs. Ivery, of the Reigate Nursery.*—Having procured good healthy plants, shift them into rich brown turfy peat-mould, which has been exposed to the air for at least six months previously; to this add silver sand, in quantity about one-sixth of the peat. Take care to drain the pots well with broken crocks or bricks. Some kinds are liable to die off from some unknown cause, and require to be worked on *A. phœnicia*, as that is the most hardy, and to the soil for these may be added a small quantity of turfy loam; give them a good watering, and place them in a warm part of a greenhouse or pit, in April or the beginning of May. Some of the sorts will soon shoot vigorously, and will require stopping once, which will cause them to become more bushy, and to form handsomer plants. Syringe them with soft water when you shut up in an evening; they may remain here for the summer. They should be watered occasionally with manure water, and at all other times with soft water. Many gardeners place their Azaleas out of doors against a north wall, or under trees, about the end of July or August, but this practice causes the foliage to become brown, and it seldom recovers until the following spring; give plenty of air from this time, water more sparingly, and some of the free-flowering kinds will begin to set their bloom. Keep them in the coolest part of the greenhouse for the winter, and as soon as the young shoots appear, and the flowers begin to colour, they may again be shifted, but they ought not to flower the first season if you intend to make specimens of them. Those that grew freely last year, will now require a good-sized pot; prepare the mould the same as before, and mix with it a good quantity of crocks broken fine (many use charcoal); this will assist the drainage very much. As soon as they have done flowering, the seed-pods should be all removed, and they may again be placed in the warmest part of the greenhouse; give them a syringing with soft water, and shut up the house every evening about six o'clock for the next two months; after this, admit air more freely night and day; water more sparingly; the wood will soon begin to get firm, and the bloom to set. Introduce a few of the earliest kinds into the stove to forward them; and the others may remain in the greenhouse or conservatory, just kept from frost, and by the next blooming season you will have some neat flowering plants. Should you wish to keep any in bloom longer than usual, cut off the tips of the pistils, and the flowers will hang a week, or more, longer than they generally do. Continue to shift as they require it, and you will soon have fine specimen plants.

The frontispiece to our present number is drawn from a plant belonging to Messrs. Ivery and Son, of the Dorking and Reigate Nurseries. It will, we understand, be ready for delivery to intending purchasers in the autumn of the present year.



½ size

Primula Chinensis
Var: Magnum Bonum! —

THE CHINESE PRIMROSE.

Why is this flower so favoured and caressed?
  Is it because it comes from foreign climes
To bloom for us in native beauty dressed?
  Or is it that its name familiar chimes
With sympathies, if not inborn, yet sown
  In simple hearts, in childhood's happy days,
And thus in each returning spring have grown,
  As the pale Primrose daily met our gaze?

How shall we answer these questions? The merits and beauty of this native of the East undoubtedly claim our consideration and admiration. A few years ago the number of flowers which were available in the first month of the year, as ornaments to our dwelling-rooms, was very limited, confined nearly, if not altogether, to bulbous-rooted plants, as the Hyacinth and the Crocus. It is still small, but it was a great gain when the Chinese Primrose was cultivated so extensively as to place it within the reach of all who derive gratification from the presence of flowers in their windows, or set here and there in their apartments. Thousands who had not the skill, nor the means, nor the time, to rear and tend them, were, for a few pence, able to possess a bushy plant with a profuse bloom for a long period, of various delicate hues. It was found very patient too, for it needed not to be placed in the window, to catch each ray of light which finds its way to us in the dark days, but thrived as well in a quiet corner of a room most remote from that locality. All it required was a sufficiency of water, yet never given in excess, to keep it in a healthy condition. And the plant will bear our milder winters in the open air when set in shaded spots, where it is not subjected to the cold blasts of wintry winds.

But the Chinese Primrose has beauty to recommend it. The plant itself is of a pleasing form, and the prolific umbel of flowers is really an object to be admired, not only on account of its graceful appearance, but also on account of the simple beauty of each single flower. Its natural colour is pink, but it varies from a pale and somewhat rosy lilac to a deep reddish-pink, and it is beautiful in each gradation of colour. There are also purple and white varieties, and thus we are enabled to have a great diversity of colour in a flower whose beauty is rendered the more attractive by its contrast in form with the stiff but rich-coloured petals of the Crocus, and the wax-like rigidity of the invaluable and favourite Hyacinth.

We cannot, however, allow that all the favour which has been bestowed upon the Chinese Primrose is to be attributed solely to its merits and beauty. Deprived of the adjective, we should still feel a deep interest in the flower, if our attention were called to it as a Primrose blooming early in January. True, we have seen in our own garden, on one of the most luxuriant banks of wild flowers that can be found in the land, and as wild, romantic, and picturesque a spot as Nature ever formed, our native flower in bloom throughout the year. There it has spread its pale eye to the noonday sun, when no bird but the robin cheered us with its song, and there, with myriads of its fellows, it has lit up the bank with its yellow hues, blooming amid Daffodils, and the strawberry-like Potentilla, and numerous other favourites, when the rich mellow tones of the nightingale were heard rising through the balmy air of spring-time; but in colder parts of our island we have rarely seen the Primrose in flower before the 25th of January, and this year, though we noticed one on the 26th of that month, there was no profusion of them until April opened upon us. Hence a Primrose in our dwelling early in January would awaken our interest, and lead us onward in thought to the coming spring, its floral attractions, the beauty of awakening nature, the merry song of birds, all painted by imagination in the aspects and colours of the past, which faithful memory had stored up in her collection of pleasant reminiscences. How favourable such a state of feeling for the introduction of a stranger! "A Primrose! how large! how beautiful! Where did you meet with it?" "Oh! it's a native of China—quite a foreigner; brought over to England to be educated, and now it likes the climate so well, if kept from its too chilly winds, that its progeny is likely to become as plentiful in our conservatories and window-gardens as our native Primrose is on the hedge-banks and woodlands." How welcome such an addition! How gladly is it received, thus associated with earliest impressions of Nature's beauty in her full simplicity. Thus do we insensibly admit into our esteem such worthy objects as are, naturally or incidentally, connected with those which had before possessed our regard.

If the native flower of a foreign land thus wins our sympathy, from its relation to one indigenous to our island, loved and admired by all ranks alike, we may in some measure conceive the delight which would fill our hearts to behold our own Primrose blooming on a foreign shore. Among the emigrants who leave in thousands the land of their birth, to find a home amongst an alien race, or to join their fellow-countrymen in a British colony, there are those who are anxious to possess some living object connected with the place of their nativity, which they can tend and nurture, and which, though tongueless, shall talk with them of days that are past, of friends and kindred, with whom, it may be, happier hours were spent, or by whom deeper sorrows were shared. Those who possess deep feeling, whose souls, as it were, appropriate to themselves all that is to be loved, and admired, and imitated in the character of relatives and intimates, to be carried with them through life, and (may it not be so?) to be remembered and recognised, and developed more fully in the world of spirits, where nought of the dross of human nature shall mar the sweet communion of kindred souls—those are they who take care to bear with them some such object, and thus, we are told, was the Primrose of England first planted in Australia. A lady secured the root of one in a glass bottle, in which had been placed a wet sponge and a little earth. By her care it arrived with her in the colony, and, just as they were about to disembark, the favourite began to show the colour of its bloom, to the delight and wonder of all the passengers. It is related that the excitement it created when taken on shore was so great, that numbers crowded round to catch a view of the well-known flower, which thousands had not seen for years, and that, to prevent its sustaining any injury, it was necessary to place a guard over it. An anonymous writer, inspired by the account of this incident, sent the following beautiful lines to *Ainsworth's Magazine*:—

"Australia's strand was swarming
With myriads, tier on tier;
Like bees they clung and clustered
On wall, and pile, and pier.

The wanderer and the outcast,
Hope, penitence, despair,
The felon and the free man,
Were intermingling there.

There ran a restless murmur,
(A murmur deep, not loud,
For every heart was thrilling,)
Through all that motley crowd.

And every eye was straining
To where a good ship lay,
With England's red cross waving
Above her decks that day.

And comes she deeply freighted
With human guilt and shame?
And wait those crowds expectant
To greet with loud acclaim?

Or comes she treasure-laden?
  And ache these anxious eyes
For sight of her rich cargo,
  Her goodly merchandize?

See! see! they lower the long-boat,
  And there—they man the barge—
Trick'd out and mann'd so bravely
  For no ignoble charge.

Gold gleams on breast and shoulder
  Of England's own true blue;
That, sure, must be the captain
  Salutes his gallant crew;

And that the captain's lady
  They're handing down the side.
'Steady, my hearts! now, steady,'
  Was that the coxswain cried?

'Hold on!' She's safely seated.
  'In oars!'—a sparkling splash,
Hats off on deck—one cheer now—
  'Pull, hearties!'—off they dash.

And now the lines long stretching
  Of eager gazers strain
(Converging to one centre)
  The landing-place to gain.

'A guard! a guard!' in haste then
  The Governor calls out;
'Protect the lady's landing
  From all that rabble-rout.'

Her foot is on the gunwale—
  Her eyes on that turmoil—
She pauses so a moment,
  Then treads Australia's soil.

With looks of humid wonder
  She gazes all about;
But, oh! her woman's nature
  Calls that no *rabble-rout*.

For well she reads the feeling
Each face expressive wears;
And well she knows what wakes it—
That precious thing she bears.

That precious thing—(oh, wondrous!
Oh, spell of potent power,
From English earth transported!)—
A little, lowly flower.

Be blessings on that lady!
Be blessings on that hand!
The first to plant the Primrose
Upon the exile's land!

The sound has gone before her—
No eye had closed that night;
So yearned they for the morrow,
So long'd they for the light.

She smiles, while tears are dropping—
She holds the treasure high;
And land and sea resounding,
Ring out with one wild cry.

And sobs at its subsiding
From manly breasts are heard;
Stern natures—hearts guilt-hardened,
To woman's softness stirr'd.

One gazes all intentness—
That felon-boy—and, lo!
The bold bright eyes are glistening,
Long, long unmoistened so.

The mother holds her child up;
'Look, little one!' cries she;
'I pull'd such, when as blithesome
And innocent as thee.'

No word the old man utters—
His earnest eyes grow dim;
One spot beyond the salt-sea
Is present now with him.

There blooms the earliest Primrose,
His father's grave hard by;
There lieth all his kindred—
There he *shall never* lie.

* * * * * * *

The living mass moves onward,
The lady and her train;
They press upon her path still,
To look and look again.

Yet on she moves securely,
No guards are needed there;
Of her they hem so closely,
They would not harm a hair!

Be blessings on that lady!
Be blessings on that hand!
The first to plant the Primrose
Upon the exile's land."

What a touching scene was this to witness, on setting foot for the first time upon a new continent! How little did she, who had thus carefully selected one of the most common flowers of her native fields, to remind her of home, anticipate such a greeting for her charge! How deeply would that moment be impressed on her mind in days to come! How often would she speak of it! How continually would the excitement and enthusiasm of the people come before her mind's eye! We can easily imagine that some of her fellow-passengers would smile at her weakness, as they might call it, and we can fancy how her head would droop under the feeling of a slight sense of folly, or false shame, which the sneers of others would produce. But these she would soon forget, in beholding the gratification which the sight of her blooming fellow-passenger gave to the mass present at its arrival. So it is with most of us as we pass through life. We are all going on a long voyage, one day to set our feet on an unknown shore. We are all bearing a tender flower which we hope to see blooming there, but we are too apt to be careless about it; and when we let our care be seen, the world laughs at us, and too often, half-ashamed, we hang our heads and let the flower languish. How much better were we to tend it, regardless of the world, both in times of prosperity and adversity! A writer has derived a lesson from the Primrose, on this lack of constancy and hope, which may well be thought of in the drear season of winter, when it may help the Chinese Primrose to make us more patient of dark days of gloom, and lead us to look forward to brighter seasons and a brighter world.

"I love not Comus' senseless glee,
His riot mirth and laughter rude,
Of joy the long monotony
That makes man sigh for solitude:
As little love I drooping ones,
Who hang for aye the pensive head,
As if our natural breath were groans,
And sorrow were our daily bread.

Therefore, sweet Primrose, I love thee,
And every hedgerow thou dost press;
I look, and love the constancy
That lights thy nook with cheerfulness;
When autumn gales sweep roughly round,
And sister flowerets fade and droop,
Thou dost not tremble at the sound,
But show'st a bud or two of hope.

E'en on the bosom of the snow,
Despite of winter's icy breath,
Abroad thy fresh leaf thou dost throw,
Meek triumph o'er surrounding death!

In summer drought, thou yet art seen,
When all are pining, least distrest;
And still upon thy quiet green
Our aching eyes with comfort rest.

The first and blithest thou, to hear
Nature's low voice that breathes of Spring;
Thy golden tufts to gifted ear
How sweet the fairy notes they sing!
In seasons drear thou didst not pine,
But here thy bridal day we see;
The very source of joy seems thine,
Thou passest all in gaiety.

'Tis all unworthy in dark hours
To droop as hope itself were gone;
'Tis all as vain, when fortune lowers,
To laugh, and sing, and revel on.
Oh! be my heart a fresh Primrose,
Despite of Time's all-sweeping scythe,
Still hopeful amid drought and snows,
In spring-time blithest of the blithe!"

S. R.

PROPAGATION.—The Chinese Primrose holds a very high position amongst winter flowers, and happily for those who desire to possess such luxuries, there is little difficulty attending either its propagation or general management. Ordinarily the plants are raised from seed, which ripens readily in this country in abundance, so abundantly indeed, that many persons throw away plants which have done blooming. Every grower should save his own seed, and if he wishes to obtain a choice variety, the best plan is to purchase a plant, and take care to gather the seed from it. The double varieties, of which there are now some specimens, are increased by cuttings.

RAISING THE PLANTS FROM SEED.—With a little care and forethought plants may be raised so as to bloom during nearly eight months of the year, beginning in October, and continuing to enliven the greenhouse or living apartments of their owner through the whole of the winter. Some are of opinion that those thrive best which are annually raised from seed, but others entertain a different view. It is perhaps a difficult matter to determine which course is preferable, as very trifling circumstances in the management of either may produce opposite results. In order to accomplish what we have above stated, as to the long period of flowering, it is necessary to sow a quantity of seed in March, in pans filled with a light sandy soil, which should then be placed in a cold frame. A second sowing should be made some time in the month of May.

TREATMENT OF SEEDLINGS.—When the seeds have germinated, and show their leaves just above the soil, a little damp moss is placed over them, in order to give a constant but gradual supply of moisture. This is essential, for drought at this period of their growth would inevitably destroy the young plants.

When three or four rough leaves are formed upon the plant, they may be transplanted into small pots, of about three inches diameter, supplied with the necessary drainage, and filled with the compost directed. This transplantation must not be put off beyond this stage, because if they are allowed to remain in the seed-pans too long they will die off, probably from the want of sufficient nourishment in the soil in which they germinated.

TREATMENT OF TRANSPLANTED PLANTS. — Plants raised from seed in March will require "stopping" from time to time, by the removal of the flower-buds, which treatment will strengthen the plants, and having been shifted from small pots into those of five and seven inches in diameter, they will, by September, have become good plants; and to secure their blooming well, a sufficient amount of light, of moderate intensity, a liberal supply of water, occasionally of clear liquid manure, and protection from frost, are all that is required.

Those which were raised in May need the same treatment, being finally shifted, not later than September, into larger pots; they should have the flower-buds all taken off up to the end of the year, to delay their flowering until the later winter and spring months.

SITUATION.—Whether the plants are in a greenhouse or dwelling, they should be placed in an airy part of either. Air is as essential to them, in due measure, as water, and if withheld, the same result will follow as if they were injudiciously treated with respect to water, that is, they will be destroyed by damp.

DRAINAGE.—This is a very important point to be attended to in the management of the Chinese Primrose in pots; therefore, in preparing the pots for their reception, care must be taken to secure a free course for the water at the bottom, and then to fill up the lower part with loose gravel, placing the large pieces lowest, and a thin layer of moss on the top, so as to prevent the soil above from being washed down, by which the spaces between would soon be choked up, and superfluous water hindered from running through.

WATERING.—Great attention is needed in this particular in the treatment of this plant, for, to use the language of the florist, it is very liable to "damp off," and this fatal result will follow rash or careless management in the supply of water. The best mode of preventing this is, when the plants are well established, to put feeders of water under the pots, and when the plants are on the point of blooming, the quantity of water should be increased, and liberally given when in full flower, as the demand for moisture will then be considerably greater. The plants should never be watered over the tops of the pots, as they will not bear that treatment.

SPENT PLANTS.—When plants have done blooming, it is not unusual to throw them away. Instead of disposing of them in this way, pinch off the flower-stems neatly, and remove some of the lowest leaves, and transfer the plants into six-inch pots. Plant them somewhat deeper in the soil than they were before, by which means they will be forced to strike out new roots. They should then be set in a moderately shady place, where they will grow and make strong plants by the autumn, and bloom sooner than those which have been raised from seed in the spring. They should be looked over now and then as summer advances, and any flower-buds which appear must be removed, so as to strengthen the plants; in this manner, also, the blooming is delayed, so that they will display their beauty in the autumn and the winter, when flowers are scarce, and consequently to be desired.

Soil or Compost for the Chinese Primrose.—The pots having been supplied with ample drainage, they must be filled with a compost, formed by the thorough mixture of equal parts of loam, sandy peat, well-rotted manure, or, in place of the last, vegetable mould, or, which is probably quite as good, sandy peat, vegetable mould, and turfy loam, in the following proportions: one barrowful of sandy peat, one of vegetable mould, and two of turfy loam, taking care to mix them well together.

Another compost is also highly recommended, formed chiefly of leaf-mould in a thoroughly decomposed state, with the addition of a small portion of each, of yellow loam, peaty soil, wood ashes, and a little charcoal in pieces about the size of a pea, with a sprinkling of sharp sand.

House and Out-door Treatment combined.—This treatment appears to be attended with less trouble than when the plants are wholly confined to the greenhouse. Seedlings raised in March, and duly shifted into three-inch pots, and set in a shady part of the house, will be ready for planting out by the latter end of May. The best situation is under a north wall, where a frame should be got ready for their reception, having a bed of compost made of leaf-mould and turfy loam, in the proportion of three to one.

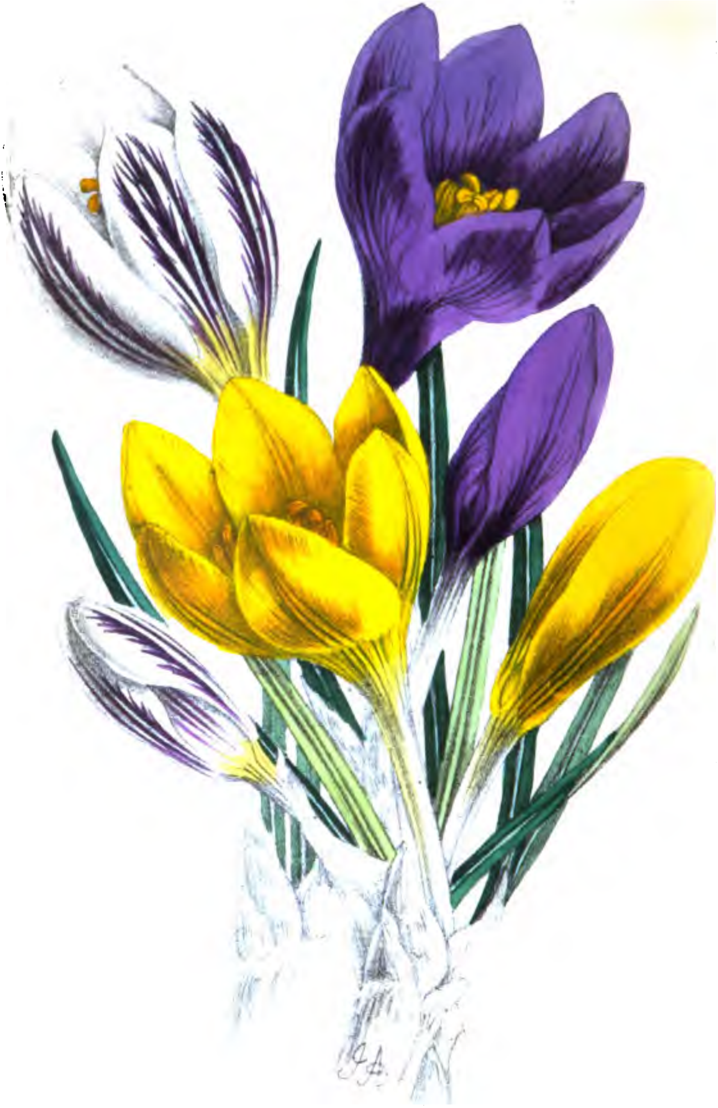
There they should be planted out at the time above stated, with a space of six or eight inches between each, and having been kept close for a few days, until they have recovered the shock of their removal, they may then be fully exposed to the dews and rains of heaven. They will then require nothing more than a free supply of water, and occasionally a little liquid manure, until September, when they must be again shifted into pots of such sizes as may be necessary. After potting, they should be returned to the frame, and kept close, their leaves being daily wetted three or four times, to prevent them from flagging. In a fortnight they may be transferred to the greenhouse, where they should be sparingly watered.

PRIMULA SINENSIS, *var.*, *Magnum Bonum.*—The variety thus named is figured in our frontispiece, being drawn by Mr. Andrews, from the living plant, which is the property of Messrs. Henderson, of the Wellington Nursery, St. John's Wood. It was raised from *P. sinensis rubra fimbriata*, by a grower who yearly cultivates many thousands for the London market. The flowers are just twice the size of those in the plate, it being impossible to represent them of the full dimensions in the allotted space. The owners say that "one predominating feature in this Primula is, that the general character of the plant is very distinct, and that every seed which can be saved 'comes true' and exactly like its parent."

This beautiful flower was first imported from China in 1820, and has been treated as a greenhouse biennial.

The following are the chief varieties in cultivation:—

Fimbriata alba,	Fringed white
„ plena,	„ double
„ rosea,	„ rose coloured
„ rubra,	„ red
Flore albo,	White-flowered
Plena,	Double
Plena rubra,	Double red



Crocuses.

THE CROCUS.

This beautiful though common flower has perhaps been too much neglected by the professional and amateur florist, in consequence of the importation of exotic plants which require greater skill in their successful cultivation, and yield a higher remuneration, either pecuniarily or honorary. Little art will enable any one possessing a small plot of ground to produce fine bloom from the bulbs of this genus, provided the ground be in a favourable locality. Many species are reckoned natives of our sea-girt isle, and these of course naturally thrive in their native soil and native air, while foreign species soon become naturalized and conform to the peculiarities of our climate.

Of the indigenous species is the Saffron Crocus (*C. saticus*), the stigma of which is very fragrant. This was once cultivated extensively in England. The flowers are plucked early in the morning, and the stigmas, with a portion of the style, are carefully picked out of the flower, and then dried upon a kiln.

The Purple Spring Crocus, supposed to have been naturalized, blooms in March, and in the neighbourhood of Nottingham Castle this species covers many acres with a mantle of bright purple. The least

Crocuses

THE CROCUS.

THIS beautiful though common flower has perhaps been too much neglected by the professional and amateur florist, in consequence of the importation of exotic plants which require greater skill in their successful cultivation, and yield a higher remuneration, either pecuniary or honorary. Little art will enable any one possessing a small plot of ground to procure fine bloom from the bulbs of this genus, provided his ground be in a favourable locality. Many species are indeed natives of our sea-girt isle, and therefore naturally thrive in their native soil and native air, while foreign species soon become naturalized and conform to the peculiarities of our climate.

Of the indigenous species is the Saffron Crocus (*C. sativus*), the stigma of which is very fragrant. This was once cultivated extensively in England. The flowers are plucked early in the morning, and the stigmas, with a portion of the style, are carefully picked out of the flower, and then dried upon a kiln.

The Purple Spring Crocus, supposed to have been naturalized, blooms in March, and in the neighbourhood of Nottingham Castle this species covers many acres with a mantle of bright purple. The Least

Purple Crocus blooms at the same time. Its habitat is the park of Sir. H. Bunbury, at Barton Hall, Suffolk. In the spring of 1841 there was an unusual abundance of them, some persons supposing that the extraordinary number which appeared had been forced up by the soaking of the heavy snow when thawing. The Golden Crocus (*C. aureus*) is also found in the same locality.

It has been noticed, as a remarkable fact, that the Naked-flowered Crocus (*C. nudiflorus*) adorns the meadows between Nottingham Castle and the Trent, in the fall of the year, just as the Purple Spring Crocus above named does in the spring.

The Showy Autumnal Crocus (*C. speciosus*) flowers in October, and is found in meadows about Halifax and Warrington. There is another flower, called also the Autumnal Crocus (*C. autumnale*), or Meadow Saffron; it bears also the name of Naked Lady, from the fact of its pretty flowers presenting themselves without leaves. It is a plant of great interest and value. The peculiar habit of this Crocus furnished the celebrated Dr. Paley with an argument in favour of the compensatory system, by which the Almighty Creator has supplied, in place of what we might regard as a defect, some organs or habits which make up or compensate for it. He says, "I have pitied this poor plant a thousand times. Its blossom rises out of the ground in the most forlorn condition possible, without a sheath, a fence, a calyx, or even a leaf to protect it; and that not in the spring, not to be visited by summer suns, but under all the disadvantages of the declining year. When we come, however, to look more closely into the structure of this plant, we find that Nature has gone out of her course to provide for its security, and to make up to it for all its defects. The seed-vessel, which in other plants is situated within the cup of the flower, or just beneath it, in this plant lies under ground, within the bulb. The tube of the flower extends down to the root. The germ grows up in the spring, upon a footstalk, accompanied with leaves; the seeds have thus the benefit of the summer, and are sown upon the surface. The order of vegetation externally is this: the plant produces its flowers in September, its leaves and fruits in the spring following."

The flowers of this species appear when nearly all others have ceased to bloom. Well do the lines of White apply to this plant :—

" Say what impels, amid surrounding snow
Congealed, the Crocus flaming but to glow?
Say what retards, amid the summer blaze,
The autumnal bulb till pale declining days?
The God of Seasons Whose pervading power
Controls the sun, or sheds the fleecy shower;
He bids each flower His quickening word obey,
Or to each lingering bloom enjoins delay."

No sooner has dark Decmber passed away, than we look for the foliage of the Crocus and the snowdrop to be peeping above the surface of the earth. These are two constant companions in Flora's train. Prior fancifully regards the snowdrop as the bride of the Crocus, of which he thus says :—

"Dainty young thing
Of life!—thou venturous flower,
Who growest through the hard cold bower
Of wintry spring.

Thou various-hued,
Soft, voiceless bell, whose spire
Rocks in the grassy leaves like wire,
In solitude.

Like patience, thou
Art quiet in thy earth,
Instructing hope that virtue's birth
Is feeling's vow.

Thy fancied bride,
The delicate Snowdrop, keeps
Her home with thee; she wakes and sleeps
Near thy true side.

Will man but hear!
A simple flower can tell
What beauties in his mind should dwell,
Through passion's sphere."

Miss Twamley has been mindful of the companionship of these two joint harbingers of spring, Here are her merry lines:—

"The rose is for the nightingale,
The heather for the lark;
But the holly greets the red-breast
'Mid winter drear and dark;
And the snowdrop wakened by his song,
Peeps tremblingly forth
From her bed of cold still slumber,
To gaze upon the earth.
For the merry voice above her
Seemed a herald of the spring,
As o'er the sleeping flowers
Blithe robin came to sing—
Up, up! my lady Snow-drop,
No longer lie in bed,
But dance unto my melody
And wave your graceful head."
The bulbul woos the red, red rose,
The lark the heathery dell;
But the robin has the holly-tree,
And the snow-drop's virgin bell.
The Snow-drop timidly looked out,
But all was dim and drear,
Save robin's merry song, that sought
Her loneliness to cheer.

And presently the Crocus heard
Their greeting and awoke,
And donned with care her golden robe,
And em'rald-coloured cloak;
And, springing from her russet shroud,
Stepped forth to meet the sun,
Who broke the clouds with one bright glance,
And his jocund race begun.
The Crocus brought her sisters, too,
The purple, pied, and white;
And the red-breast warbled merrily
Above the flowerets bright.
Oh! the nightingale may love the rose,
The lark the summer's heather;
But the robin's consort flow'rs come
And brave the wintry weather."

PROPAGATION.—The Crocus is propagated in two ways: by seeds, chiefly for the purpose of raising new varieties, and by offsets, for increasing the stock of known species and approved varieties.

BY SEEDS.—The Crocus is by no means to be relied upon as to its producing and perfecting seed. Some cultivators speak of it as prolific, others have never gathered any seed from their plants. When the seed-vessels are ripe, they soon burst and scatter their seed, and unless the grower be very vigilant, he may lose the produce, and this may perhaps account for the apparent unproductiveness of the Crocus; but when seed is obtained and fully ripe, it should be sown immediately, somewhat thickly, in pans well furnished with drainage, and filled with light earth. A little water may then be given, and the pans placed in a cold frame; no artificial heat is necessary. The seeds will show their vitality by putting forth their leaves early in the ensuing spring. The young plants are allowed to remain in the seed-pans until the succeeding autumn, and when the leaves are turned yellow and decayed, the soil in which they have grown is to be passed through a fine sieve, and all the tiny (for such they may be called) bulbs, picked out with care. Then prepare a bed similar to that hereafter directed for offsets, where they must be permitted to remain until they flower; then, while they are in bloom, all the choice ones should be marked carefully, and these should be increased by offsets until as many as are required have been procured.

BY OFFSETS.—When the bulbs of the Crocus are taken up for the purpose of being replanted, all the young offsets which have been formed should be separated from the parent bulbs, care being taken to prevent those which bear different-coloured flowers from being mixed together. It is also well to sort the offsets, so that all of the same size may be kept apart by themselves, since the larger corms will be the first to bloom.

For the offsets a bed must be made in the open ground about the middle of October, such that the soil may be like that herein recommended. Make a drill across the bed two inches in depth, and if more than one drill be required, the drills may be about six inches apart. In these plant the larger sizes first, at a distance of an inch from each other; the smaller sizes may be planted closer. When all are planted, cover them with sifted soil of the same kind as the bed, and make the surface smooth with a fine short-toothed rake.

After-treatment of Offsets.—In the ensuing spring, as soon as the young offsets have put forth their leaves, let the soil between the rows be carefully disturbed, so that the gentle and genial rain may have free access to the yet tender rootlets. By this disturbance of the soil the surface will also be prevented from cracking in dry weather. Beyond this, the bed will need little attention until the leaves decay, always excepting the necessary removal of weeds and slugs, as they are found. Sometimes there will be here and there a flower put forth, but these must be picked off, or they will deprive the bulb of that nutriment which should be expended in increasing its bulk.

In the growth of the Crocus, as indeed in that of all other plants, great care is needed to avoid injuring the leaves. Without them the bulbs cannot live, and if they are in any way injured, they cannot so well perform their peculiar functions in the economy of the plant; and consequently the bulbs cannot have the same accretion of substance as when the leaves are preserved in full vigour.

When the year's growth is completed the leaves will have decayed, and may then be removed. The bulbs, however, must not be disturbed, but allowed to continue in their nursery bed, since they need two years to attain to their full growth; and in autumn the bed may receive a top-dressing of short well-rotted dung, to furnish fresh nourishment and enrich the soil. In the succeeding spring, when the leaves again appear, let the soil be again disturbed and the manure mixed with it, and in the autumn the roots may be taken up, and planted where they are intended permanently to remain.

Situation and Locality.—The Crocus will grow and bloom in almost any situation, but is greatly affected by the atmospherical condition of the various localities in which it may be planted. It loves the pure air of the country, and delights in the crystal drops which fall there from the clouds of heaven, and increases in strength and beauty under their combined influence; but it pines, and droops, and dies in the crowded town or its suburbs, and still more quickly is its existence brought to a close when subjected to the smoke-filled air of a manufacturing town, and when the pores of its leaves are choked with the black flakes which continually descend in such localities. In the country the bulbs rapidly increase in number when rightly treated, and the flowers maintain their full proportions; but in towns the flowers lose their beauty, and the bulbs gradually dwindle away and perish.

Soil for the Crocus.—A loamy soil of moderate tenacity, neither very light nor yet very strong, but dry, rich, and deep, suits the Crocus best. In preparing a bed or border for the Crocus, it should be well enriched by covering it with a layer of thoroughly decomposed manure, in which the quantity of cow-dung largely preponderates, of two inches in thickness, and then deeply digging the whole over, carefully incorporating the manure with the soil. The bed will be further improved if, before planting, it be forked over with a five-tined fork three or four times, so as to get the manure and soil still more completely mixed together. If the native soil be devoid of sand, a good supply of river-sand should be given together with the manure.

Planting the Crocus.—In a soil adapted to its requirements, the Crocus will thrive many years without requiring removal; nevertheless, it is better for being occasionally taken up and removed, because its roots are thus placed in immediate contact with fresh soil, and find nutriment without being compelled to search among and through exhausted earth for their own peculiar food.

The season for planting or transplanting the Crocus extends from the beginning of October until the middle of November. The earlier they are planted in the season the better.

At this period of the year the ground is generally wet, but yet we are not unfrequently favoured with a succession of fair weather, and then we may expect the earth to be moderately dry. A fine day, when the soil is in that condition, is the most favourable time for the operation of planting,

If the bulbs are planted in rows, the rows should be six inches apart, and the bulbs four inches apart in the rows. Holes for their reception may be made by means of a dibber, notched at a proper distance from its point, which should be blunt, so as to ensure uniformity of depth, which must be such as to allow of the bulbs being covered with a layer of earth two inches thick above them. The same end may be gained by making drills of the like depth as the holes, and placing the bulbs in them at the distance from each other already named.

If the bulbs are uniformly of a good size, the foliage, when they are planted as above, will altogether cover the surface of the bed, and the flowers will stand so thick as nearly to touch each other. The effect will be the greatest if each bed be planted with bulbs bearing flowers of the same colour. A very good effect is produced when Crocuses are planted in borders by the side of a walk or drive, by arranging them in rows, each row of a different colour; or in small patches of ten to twenty bulbs, each patch being formed of a distinct colour.

New Varieties.—The Crocus has been rendered more attractive by the ingenious care and attention of the florist, who has raised several new varieties, in which the flower is larger, the shape more in conformity with an ideal perfection, and the colours finer. The amateur who is desirous of procuring for himself something new in this way, must not of course be too sanguine in his expectations; he will probably meet with many disappointments, but patient perseverance will be, no doubt, at the last rewarded. It seems to be granted that, in endeavouring to raise improved varieties of the Crocus, we must look for size and shape to the male parent, and for bright and distinct colours to the female. Having made choice of the species or varieties to be hybridized, and both flowers being in bloom, the pollen is removed from the flower to be operated upon, and the stigma is dusted, by means of a camel-hair pencil, with pollen from another flower possessing the required properties. The impregnated flowers are then covered with fine gauze, that no industrious bee or other insect, likely to bring undesired pollen, may approach the stigma. The seed soon ripens, and must therefore be watched and gathered in time. When the seed-vessels become yellow gather them, and put them in a sheet of paper in a shaded and dry place, where the seed will gradually harden. When dry, separate the seed from the seed-vessels.

Chevreul's Arrangement of Colours for Crocuses.—Crocuses may be easily obtained white, violet, and yellow: they should be planted in lines thus:—

1. Yellow, violet, yellow, violet, yellow, and so on.
2. Yellow, violet, white, yellow, and so on.
3. Yellow, white, violet, white, yellow, white, and so on.
4. Yellow, violet, yellow, white, yellow, violet, yellow, white, and so on.
5. Violet, yellow, violet, white, violet, yellow, and so on.

Or a bed may be formed in patches, in the following order:—

○
violet,
○ ○ ○
yellow, white, yellow,
○
violet.

○
yellow,
○ ○ ○
violet, white, violet,
○
yellow.

○
violet,
○ ○ ○
white, yellow, white,
○
violet.

○
yellow,
○ ○ ○
violet, white, violet,
○
yellow.

○
violet,
○ ○ ○
yellow, white, yellow,
○
white.

Forcing the Crocus.—The Crocus may be easily forced, but if subjected to too high a temperature, the probability is that they will be luxuriant only in leaves and deficient in flowers. The simplest mode, and one which is least likely to injure them, is to place them in a rich soil, and, if pots be used, in five-inch or six-inch pots, five or six bulbs in each pot, according to the size of the bulbs. This should be done about the beginning of October, and when the planting is finished, cover the pots over with coal-ashes until they have formed roots; then put them in a gentle heat, when they will bloom much earlier. The effect of the application of even moderate artificial heat is to weaken the bulbs, so that after being forced one year, they will require two years' rest in a nursery bed to recover their former vigour.

Crocuses may not only be grown in pots, or saucers, but there are beehives, hedgehogs, globes, etc., with holes at the sides and tops, through which it is intended that the foliage and flowers should make their way. In planting them in any of these, either moss, or sand, or rich mould may be used; and care must be taken to put each bulb directly under the hole from which it is to issue. After planting give them a good watering, and subsequently keep the mould, sand, or moss a little damp, until the bulbs are in a strong growing state, when a supply of water must be constantly given. They must be kept where there is no artificial heat, as on the staircase window, or in the window of a room without a fire, letting them have all the air and light possible. Towards the middle of January they may be placed, in the daytime, in the window of a room where there is a fire kept, and where they will have abundance of light: by this means the period of their flowering will be accelerated.

CROCUSES IN SWITZERLAND.—A correspondent of the *Gardeners' Chronicle* thus writes of these beautiful flowers:—Among "the instances of creative wisdom and design in the vegetable world, the Crocus appears to me to furnish an instance of adaptation to a peculiar natural locality, which, as far as I am aware, has not hitherto been noticed in print.

Having occasion some years ago to pass through Switzerland by the route of the Simplon, I observed, a little below the village that bears that name, and, of course, on the Italian side of the descent, a large tract covered with Crocuses. It was in the middle of May, but they were not yet in bloom. Although to this day quite ignorant of their size, colour, or species I have often regretted that I did not dig some up, to bring home with me.

Spring creeps very slowly up the sides of the mountains even with a southern aspect. They had not long been uncovered from the snow, which, a little higher up, was thawing from day to day. The spot occupied by the Crocuses was a swampy hollow of considerable extent; but I observed none on the drier hillocks around it. The swampiness was caused, not by one of those little burns so innumerable and so beautiful in mountainous countries, but by the trickling down of the water from the line of melting snow, which brought with it from the hill-side a small but perceptible deposit of mud. This thin layer is, of course, annually repeated, and a stationary bulb would in a few years be buried beyond the power of vegetation. I cannot think it fanciful to believe that the upward progress of the Crocus is designed to enable them to keep pace with the gradual elevation of the soil in which they are rooted.

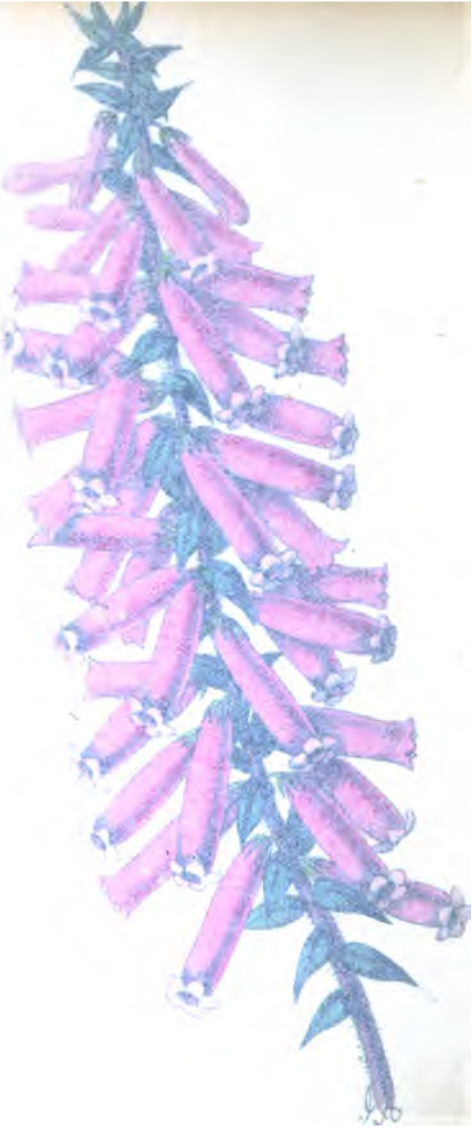
The Narcissus, which grows wild in the south of Europe, in marshes that are from time to time inundated, also rises, though more slowly than the Crocus. The Garden Hyacinth likewise moves upwards. The Tulip and the Meadow Saffron appear to have the faculty of accommodating themselves at once to the most suitable depth of soil, forming an entirely new bulb above or below the old one, which is left a hollow shell, as if its whole substance had been transferred, like the honey that bees will remove from the comb in a bell-glass to the hive beneath. A curious essay might be written on the locomotion of plants, by any one who chose to avail himself of the information which our great horticultural and botanical institutions render available to the industrious. Were it not for the power of rising to the surface, my unknown Crocus of the Simplon would in a few years certainly be overwhelmed by the yearly top-dressing, and the species affecting such situations would become extinct, for the Crocus rarely seeds. As it is, those in the Alps may have risen yards. Some of our native orchids, by the yearly decay of one of their two bulbs, and the formation of a fresh one on the opposite side, proceed onwards at not a slow rate. The Strawberry puts on seven-league boots in comparison, and frequently escapes from the rich man's garden to refresh the wayside traveller. How many years would it take a new seedling strawberry to travel by runners from London to the Land's End? The Raspberry mines its way to a fresh station by a subterranean, mole-like process, blind, but not unguided, and then rises unexpectedly to the light of day. The Elaterium, or

Squirting Cucumber, is furnished with a fine engine for the dispersion of its seeds; the Touch-me-not Balsam scatters them like an exploded shell. Even the humblest of the race, the Champignon, and many other fungi, start from a centre, and travel outwards in circles, imitating in their lowly way the progress of sound and light.

"If it be asked 'Why should the Supreme Being bestow this care on the preservation of a useless, unseen Crocus, that vegetates amidst perhaps inaccessible hill-tops, where there is scarcely an insect to sip its sweets, much less a human eye to admire its beauty?' we in return demand, 'Is it for your own merits, caviller—for your usefulness, your services to mankind—that you have been created, supported, and spared so long by the mercy of a benevolent God?'"

D.

The accuracy of the above statement with respect to the rising of the Crocus in the act of forming the new bulbs has been called in question by many; but there can be no doubt that the base of every bulb formed within the outer cuticle of the old one must be above the base of the parent bulb. Its position may be, indeed, but little more elevated, yet we have every reason to believe that the plant may have the power of raising itself in different localities more or less, as the exigencies of its position demand.



Epacrides

THE EPACRIS.

As the flowers of summer bloom in succession, fade and pass from our view, we do not often think how time flies away. We watch some favourite plant, anxiously striving to perceive some incipient bud, and our interest increases as the little excrescence grows in size; day after day follows, and then we are delighted with the fully expanded flower which greets our eyes. Our thoughts are taken up with the present enjoyment of floral loveliness; so numerous are the kinds of plants which surround us, that when one has fulfilled its destiny, and every blossom has faded from its branches, we scarcely miss it from the throng; but a little later and then the scene is changed, the decay is more general; not only do we see flowers dead and black, but the leaves, which added lustre to their beauty, are changing too—the green leaves are becoming yellow, and soon they are embrowned, and at length drop lifeless from the branches they so long adorned. Few flowers are seen in the parterre; here and there only one or two may be found—some, perhaps, screene from autumnal winds, yet paler than their fair sisters, who have long since ceased to be. These are not suggestive of cheering thoughts, rather do they remind us of what we have lost and of the dreary season at hand. Yet to one fair poet they have seemed more beautiful than all others; they roused up associations which recall happy moments, and in writing of late Autumn Flowers she does but give us the reflection of her own mind.

"These few pale Autumn flowers,
How beautiful they are!
Than all that went before,
Than all the Summer's stores,
How lovelier far!

And why? they are the last!
The last! the last! the last!
Oh! by that little word
How many thoughts are stirred,
That whisper of the past!

Pale flowers! pale perishing flowers,
Ye're types of precious things;
Types of those better moments
That flit, like Life's enjoyments,
On rapid, rapid wings.

Last hours with parting dear ones
(That time the fastest spends);
Last tears in silence shed;
Last words half uttered;
Last looks of dying friends.

Who but would fain compress
A life into a day,—
The last day spent with one
Who, ere to-morrow's sun,
Must leave us and for aye!

O! precious, precious moments,
Pale flowers! ye're types of these;
The saddest, sweetest, dearest,
Because, like these, the nearest
To an eternal close.

Pale flowers! pale perishing flowers!
I woo your gentle breath;
I leave the summer rose
For younger, blither brows;
Tell me of change and death!"

And soon indeed these few loiterers are gone. The flowers of the field are all dead. Small the number which remains in the gardens; and soon they are dead also. Ere Christmas comes, except in rare seasons, all flowers have ceased to bloom in merry England in the open ground, save in some favoured spots where a milder climate prevails. But yet Christmas has its charms, and they who dwell where all the subjects of Flora's kingdom have passed away for a time from the surface of the earth, have their senses thereby sharpened for a more keen enjoyment of the succeeding spring and summer. They can enter more fully, perhaps, into the peculiar pleasures of the mid-winter season, and their hearts bound with delight as they deck their houses with branches of evergreen, which reminds them that, though now all nature seems dead and dark, yet again will the fields be as verdant as the holly and the laurel; that again will every tree of the wood and the field be clothed with foliage as cheerful as the ivy and the fir; and, above all, does it remind them that now we commemorate the birth of Him through Whom, though we die, we shall at last rise again to a new and eternal existence.

Cheerfully, then, will we enjoy this festive season, for it is full of hope, yea, and of happiness too, to every family in this Christian land. Around the parent's hearth each son and daughter assembles at this joyous time. There their past successes, vicissitudes, adversities, are recounted; the future is regarded with encouraging hope, each heart strengthened and invigorated for the battle of life by the mutual sympathy of kindred spirits.

How beautifully is the true enjoyment of Christmas expressed in the following lines from *Tait's Magazine*:—

O Christmas! jolly Christmas!
Is come our hearts to cheer.
With holly crown'd and mistletoe,
The monarch of the year!
With merry din invite him in,
And heap the yule logs higher,
And pour the wine that all may join
To greet the good old sire.

For, hark! the gale is rising,
The winds blow loud and strong,
And in the gloomy storm-cloud thron'd,
Dark Winter sweeps along.
But what care we! with shout and glee,
While beauty's eye shines bright,
Blithe hours we'll spend, and our old friend
Shall be our guest to-night.

O Christmas! social Christmas!
In cottage and in hall,
To rich and poor a welcome friend,
Alike belov'd of all.
To hear thy voice our babes rejoice,
And clap their tiny hands,
While age with thee can jocund be,
And join the festive bands.

With game, and dance, and carol,
We'll hail thee as of yore;
To thee from many a flowing bowl,
A rich libation pour;
And while the snow in drifts doth blow,
While moans the dreary blast,
Our mirth and joys shall higher rise,—
Away our joys we'll cast.

O Christmas! sacred Christmas!
From yonder village bells,
To herald thy majestic step,
The pealing music swells;
And voices rise 'neath midnight skies
In holy, solemn strain,
To tell how He of Bethlehem
Was born on earth to reign.

Come, come with ancient Christmas,
To yonder hallow'd pile,
And hear the sounding anthem roll
Along the lengthened aisle;
With footsteps slow, up let us go
Where our forefathers trod,
To worship there in fervent prayer,
And hear the man of God.

O Christmas! fleeting Christmas!
Thou ever beckonest on,
Though memory dwells o'er vanished hopes,
And loved ones dead and gone.
Thou must not stay, but far away,
Through Winter's dreary halls,
To greet the year thou dost appear,
The bright new year that calls.

And onward, ever onward,
Through realms of frost and snow,
Till Winter merges into Spring,
And wild March trumpets blow.
Soon will the day with lengthened ray,
Foretell the Summer flowers;
But while they're here, with social cheer
We'll spend the Christmas hours.

J. A. L.

And while we cheerfully spend the hours of this festive season, made joyful and happy by the reunion of families dispersed by the necessities of life over this vast empire, it is no unpleasant thought that now the shortest day is past, and soon the light of day will be prolonged, and one after another old flowers will appear, the sun will shine brighter, and the song of birds will become more frequent. But to those who possess a glass house for some choice exotics, spring is already at hand; though we have no indigenous flowers which bloom for us now, yet we have obtained from other lands plants which almost change winter into summer, and contradict the very elements which strive to prove it winter.

And not the least to be admired of these natives of foreign climes is the Epacris, the first imported of which (*E. purpurascens*) will display its flowers early in January, and soon will it be followed by some of its later known sisters. One variety, indeed (*E. autumnalis*), is even now blooming. This begins to show its flowers late in October, or early in November, and continues in bloom throughout the dreary winter, until April in the succeeding spring. The species of this beautiful genus are severally natives of New South Wales, New Holland, and Van Diemen's Land; countries which are even now peopled by our race and subject to our rule, and where all the loved institutions of our native land seem destined to be perpetuated.

PROPAGATION.—This beautiful order of plants is for the most part increased and propagated by cuttings; but, in order to obtain distinct and new varieties, recourse must be had to hybridization, which involves the necessity of raising plants from seed, the produce of such flowers as have been fecundated from another species or variety.

BY SEED.—The seed is sown in pans or wide-mouthed pots, supplied with good drainage, and filled up with soil formed of broken charcoal and sandy peat of a fibrous nature. The general management of seedlings is the same as that recommended for Heaths.

BY CUTTINGS.—This operation is performed in a similar manner to the like process in multiplying

Heaths. There is no great difficulty in the way of the amateur who desires to propagate his favourite varieties for himself, the chief care required being in the selection of the cuttings.

The first thing to be done is to provide a quantity of good peat, with about one-third sand. Then take a small pot, or more than one, if needed, and fill it half full or more with broken sherds of pots; upon these place a layer of the largest and roughest pieces of the peat, and above this layer put a quantity of sifted peat and silver sand mixed, of each about half, and at the top a layer of sand, somewhat less than an inch in thickness. Gently press down the sand, and shower a little water on the surface from a watering-pot, with a finely-perforated rose attached, to settle the sand. This done, proceed to make ready your cuttings. These should be taken from the side shoots, the recently-formed wood being selected; the separation from the parent plant being made near the junction of the shoot with the previous growth. The length of the cuttings may be about an inch. Having provided a sufficient number, carefully removc the lower leaves on the cuttings by a knife of extreme sharpness, so that they may be cut off without any injury being done to the bark. The cuttings being all prepared, take a bell-glass (already provided). which just fits within the rim of the pot, set it upon the surface of the contents of the pot, and press it down with sufficient force to mark the circle of the rim of the glass; remove the glass, and plant the cuttings in straight lines from one side of the circle to the other, but within it. If you strike several varieties or species in one pot, then arrange each variety in separate rows. When all the cuttings are inserted in the sand, apply water gently, by which means the sand will be made to settle closely round the base of every cutting. In this condition let them remain until the water has evaporated from the leaves, taking care not to allow them to be exposed to the sun's rays; the water being thus dried off, place the bell-glasses on the pots, and set them in a little heat in a situation where they can be daily shaded from the solar rays. They must afterwards be attended to every day for several weeks, the glasses being taken off morning after morning, and all the condensed vapour carefully removed with a dry cloth. In the course of four or five weeks they will show signs of growth. If there appear to be a tendency to grow weakly, let the glasses be lifted off for a little time every morning.

AFTER-TREATMENT OF CUTTINGS.—As soon as the cuttings have made their roots, the young plants may be transferred to a house of lower temperature than that in which they have been started into independent life, there to continue for a few weeks, a similar course of treatment being adopted. In cloudy weather the glasses may be removed altogether, but when the sun shines brightly the plants will require to be shaded. Here the cuttings will be ready to pot off by about the end of July (assuming that they were struck near the end of May), which operation being duly performed, the temperature of a cold frame will best suit them. There they should be placed close to the glass, being shaded until they have recovered the shock of their removal. They will not require any fresh potting until spring, but their growth should be watched, and, to promote the formation of branches near the surface of the soil, the top shoots must be immediately pinched off neatly, on their beginning to grow again.

POTTING. —Early in spring the young plants will be found to have filled the pots in which they were planted, if successfully grown, with a ball of roots. These will require to be shifted at this time into larger pots. They are prepared, previous to potting, by giving, them an ample supply of water, so as thoroughly to moisten the ball of roots. When this is neglected, and the plants have been transferred to their fresh pots with the roots in a dry state, it becomes necessary to plunge the pots in water, in order to moisten the ball by absorption, which is a very objectionable mode, being calculated to injure the roots. The plants being then first watered, and a sufficient time allowed for the excess of moisture to drain away, they are transferred into duly prepared pots, which are preferred new. If not new, it is the practice to cleanse them well, both within and without, and those pots are thought the best whose substance is rather soft and porous.

Although we have frequently spoken of the importance of drainage, we must not omit to urge its necessity in potting the Epacris; they are impatient of drought, yet neither can they bear the chilling influence of stagnant water around their delicate rootlets. Hence two or three layers of potsherds, each consisting of pieces of different magnitude, the layer of the largest sizes at the bottom, being first put in the pot, these must be covered with fresh moss, and a few clean little pebbles, or pieces of broken charcoal free from dust, upon which the soil wherein the plant is to be set is laid, care being taken to keep the rougher portions of the soil below, and to have the surface of the finer peat.

If the drainage were to become obstructed, the consequences would be very injurious, hence the utility of the layer of moss, which, while it allows superfluous moisture to percolate through it and pass away, prevents earthy matters from descending into and among the potsherds, which if they gained access to them would soon become clogged; moreover, the moss requires a large proportionate amount of water to saturate it, and being saturated it does not readily part with moisture, but only in such degree as to satisfy the demands of drier matter in close contact with it; and thus it is a valuable reservoir from whence the root-fibres of the plant may obtain refreshment, should accidental neglect deprive it of its usual watering.

SPRING TREATMENT OF ESTABLISHED PLANTS.—These plants will not need to be repotted at this season, but they will be greatly benefited by a top-dressing. This is done by removing a thin layer of the soil in the pot from the surface, and substituting a layer of fresh soil, which must receive a plentiful watering to settle it. This new layer will stimulate the plants to form new rootlets, and thus to produce much finer bloom. At the same time the blooming shoots should be carefully trained, with the view of obtaining a display of flowers equally spread over the whole shrub. The pots should also receive a cleansing, if necessary, dirt or moss being removed, in order to allow air and moisture to act more freely on the roots through the pots in which they grow. As spring advances, plenty of air and light must be given, but the sun must not be allowed to shine directly upon the plants; and as at this season the atmosphere is often dry, from the influence of prevailing and parching winds, the plants need a greater supply of water to the roots, and occasional applications to the foliage when not blooming.

Cutting Down.—When the plants have ceased blooming, the flowering shoots may be cut back to within from three inches to one inch of the old wood; after this operation they will require to be kept warmer than before for a little time. They will need to be protected from a burning sun, and from heavy rains.

Repotting.—After the plants have been cut down and allowed to put out new shoots about an inch long, they may be repotted, which being done, they should receive an ample watering, and restored to the place they occupied before. Here they may remain for some weeks, being abundantly supplied with water, to encourage the emission of shoots, and with air to render them robust and hardy. As their growth progresses, due attention must be paid to their training, to make them handsome plants. Minute directions as to the methods to be adopted to secure the most beautiful form are unnecessary to the enthusiastic amateur, whose native taste will supply all the judgment and care which are required.

Treatment of Potted Plants.—When the shifting of the plants has been duly completed, they are placed in a close pit, by which their growth is promoted. If the sun have much power, shading is necessary to lower the temperature, the plants and the walls of the pit are also syringed; and as the plants grow, more air is admitted to them, and they are exposed more completely to the light. When they have reached their extreme growth the sashes of the pit are taken away, or the plants are removed to a position where they will have the sun upon them, but so as to be protected from heavy rains. It must, however, be observed that the Epacris will not bear the great heat which would be applied to its roots, if the rays of the sun fell directly upon the pot in which it is growing. The pot therefore must be plunged in another of larger dimensions, to prevent the root-fibres from being scorched. As summer declines and autumn advances, the plants are transferred to the house, to avoid the danger of frosts; in the house they are set in the most airy and lightest situations, and here, in the succeeding winter and spring, the amateur's care is rewarded by an abundance of flowers, almost equal in number to the leaves of every shoot.

About the middle of August the Epacris will have formed its young wood; the object then is to secure the full ripening of the wood. To effect this object, light and air are given to the greatest possible extent. Light is so essential to the process, that it must not be withheld, even though the plant should assume a somewhat brownish hue, in place of a bright green. This may, however, be avoided by care in preventing too sudden an exposure to a different degree of light, as, for instance, from bright sunshine to a gloomy shade, or the reverse.

SOIL FOR THE EPACRIS.—These plants require the same kind of soil as that used for the most part in the cultivation of Heaths. Turfy peat, such as that we have elsewhere described, not that which is found in boggy localities, and to which the name of bog-earth is more strictly applicable, but what is found upon heath-clad moors, where the surface-layer of the soil is formed of decayed heath-leaves, flowers, and stems, the accumulation of years. For the Epacris, this should be used in a rough state, fibrous and unsifted; having, of course, due regard to the size of the pots and the plants to be grown in it. In small pots of four inches diameter, it is well to remove pieces larger than a common nut, but this will be unnecessary in larger pots. To the peat may be added broken charcoal, the size of the pieces varying in proportion to the size of the pots. These are found of great service in the draining of the soil, and in keeping it sufficiently open.

Such is the character of the soil generally used, but it is alleged that the cultivation of the Epacris would be attended with greater success, if a portion of loam and thoroughly decomposed leaves were incorporated with the above; that more luxuriant shoots would be formed, and the number of flowers be augmented; and the reason assigned is this: the soil would be of a more porous and open nature, and consequently there would be no lodging of stagnant water around the delicate roots, which so frequently, by destroying these tender organs, endanger the very life of the plant.

WINTER NOSEGAYS.—Had our poet Cowper lived to see the great additions to our greenhouses and conservatories, he would perhaps have favoured us with verses somewhat more ardent than those with which a winter nosegay inspired him; but there is a charm in these lines, which are more readily appreciated at this season, when those affections of relatives and friends, which for a long time appearing dormant or inactive, are again called into action. The daily cares and trials of life banish from the minds of thousands, in ordinary times, all *careful* thoughts for the welfare of many dear ones; but Christmas reawakens the latent feelings, and the common anxieties of daily life being laid aside, the mind recalls one after another, with an earnest desire to know and be assured of their welfare. Such will ever value Cowper's reference to the affection which endures through all the storms of life, and not less will the Christian, who daily, in his sacred moments, remembers all who are near and dear to him, with the fervent wish for their highest interests both in time and eternity. Thus does the poet write:—

"What nature, alas! has denied
  To the delicate growth of our isle,
Art has in a measure supplied,
  And Winter is deck'd with a smile.

See, Mary, what beauties I bring
From the shelter of that sunny shed,
Where the flowers have the charms of the Spring,
Though abroad they are frozen and dead.

'Tis a bower of Arcadian sweets,
Where Flora is still in her prime,
A fortress to which she retreats,
From the cruel assaults of the clime.
While earth wears a mantle of snow,
These pinks are as fresh and as gay
As the fairest and sweetest that blow
On the beautiful bosom of May.

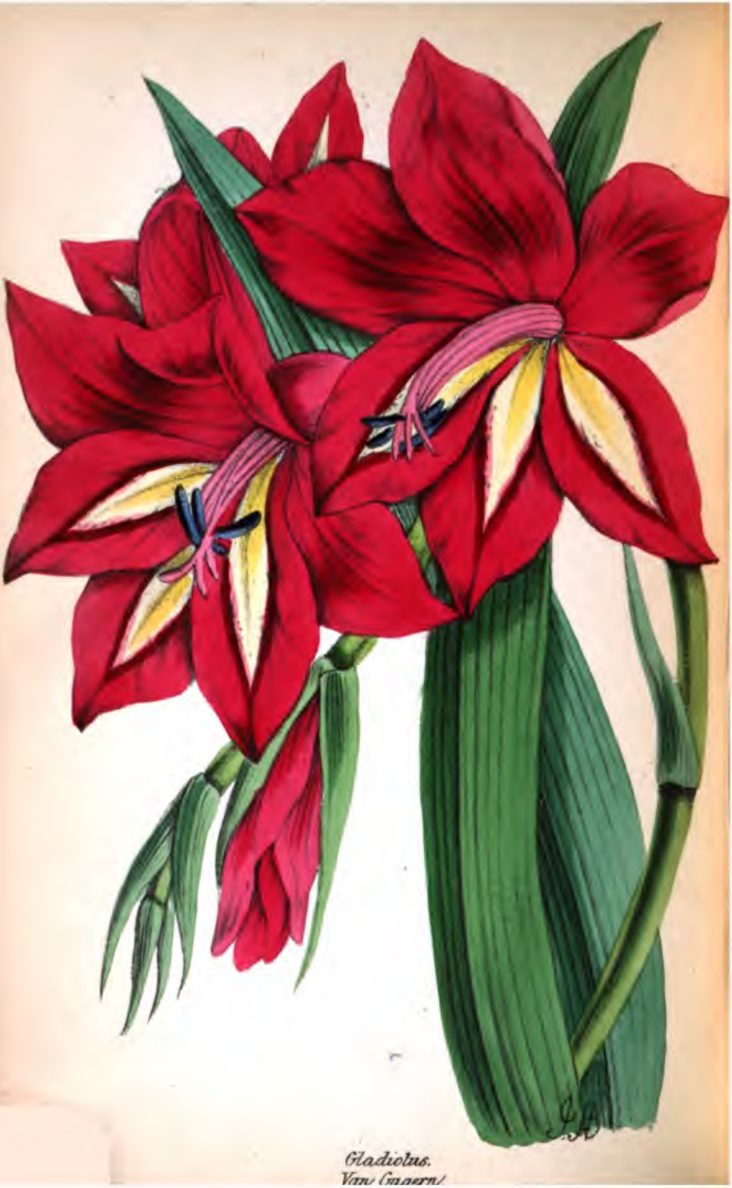
See how they have safely survived
The powers of a sky so severe;
Such Mary's true love, that has lived
Through many a turbulent year.
The charms of the late-blowing rose
Seem graced with a livelier hue,
Aud the winter of sorrow best shows
The truth of a friend such as you."

Mrs. Sigourney, the American Hemans, is somewhat differently affected by the appearance of a winter nosegay. Her gratification leads her to think what is most to be wished for, for the friend who presents it to her; and, in return for the regard which the flowers are intended to show, she expresses a deep interest for her eternal happiness—thus addressing the flowers:—

"Flowers, fresh flowers, with your fragrance free,
Have you come in your queenly robes to me?
Me have you sought, from your fair retreat,
With your greeting lips and your dewy feet,
And the heavenward glance of your radiant eye,
Like angel-guests from a purer sky?

But where did ye hide when the frost came near,
And your many sisters were pale with fear?
Where did ye hide, with a cheek as bright
As gleam'd amid Eden's vales of light,

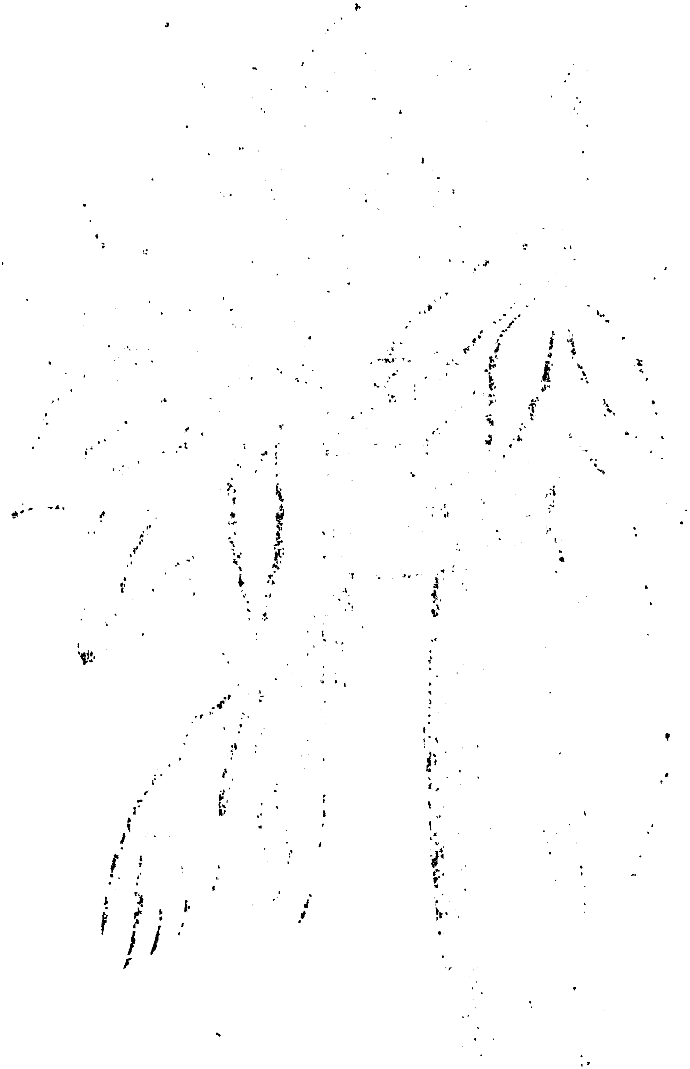
Ere the wiles of the Tempter its bliss had shamed,
Or the terrible sword o'er its gateway flamed?
Flowers, sweet flowers, with your words of cheer,
Thanks to the friend who hath brought you here;
For this, may her blossoms of varied dye
Be the earliest born 'neath the vernal sky;
And she be led by their whispered lore
To the love of that land where they fade no more."



Gladiolus.
Van Geertii

THE GLADIOLUS.

[illegible] species of this ornamental genus [illegible] English botanists was *G. communis*, [illegible] ported from the south of Europe in the year 1596. Its ordinary height is about two feet, and there are several varieties of it in [illegible] [illegible] its [illegible] [illegible] much used in the [illegible] [illegible] by hybridization, and success [illegible] ingenuity of man in combining its [illegible] and beauties with those of other species. It [illegible] the hardier kinds, and with it may be [illegible] *B*[illegible]*nus*, a species imported from Turkey [illegible] [illegible] a red flower and grows [illegible] and producing its flowers at the same period of the year, namely, in June and July. Since then many species have been imported from the Cape of Good Hope, all of an ornamental character, varying greatly as to size, colour, and period of blooming. *G.* [illegible] *[illegible]lis*, imported in 1789, was perhaps [illegible] superb flower of the species, and [illegible] deserves, great care in its cultivation [illegible] admiration from all who are capable of appreciating [illegible] beauty. Nevertheless, rivals of formidable pretensions have found their way into our conservatories and gardens, amongst which it may be *G. Nata*[illegible]



Gladiolus.
Var. [illegible]

THE GLADIOLUS.

THE first species of this ornamental genus known to English botanists was *G. communis*, which was imported from the south of Europe in the year 1596; its ordinary height is about two feet, and there are several varieties of it in cultivation in garden borders, where its red flesh-coloured flowers are very showy. This is very much used in the attempts to multiply varieties by hybridization, and submits patiently to the ingenuity of man, in combining its peculiar qualities and beauties with those of other species. It is one of the hardier kinds, and with it may be classed *G. Byzantinus*, a species imported from Turkey in 1629, also bearing a red flower and growing to the same height, and displaying its flowers at the same period of the year, namely, in June and July. Since then many species have been imported from the Cape of Good Hope, all of an ornamental character, varying greatly as to size, colour, and period of blooming. *G. cardinalis*, imported in 1789, was perhaps considered the most superb flower of the species, and it yet receives, as it deserves, great care in its cultivation, and intense admiration from all who are capable of appreciating floral beauty. Nevertheless, rivals of formidable pretensions have found their way into our conservatories and gardens, amongst which it may be *G. Natalensis*, or *psittacinus*, has the strongest claim to contend for superiority. It is indeed a splendid flower, ordinarily growing to the height of four feet, while the height of *G. cardinalis*, on the average, is only two feet. The colours of the latter are bright dark red with a white eye, while the former glories in the more showy combination of scarlet and yellow. There are also many hybrids of great beauty, and these are being increased. The genus, whether species or varieties, is altogether one of the richest acquisitions we possess of the floral productions of foreign lands.

PROPAGATION.—The beautiful genus Gladiolus is propagated in three ways, by seeds for the purpose of procuring hybrid varieties, by offsets, which the parent bulb produces in great abundance at the root, and by the bulbs which are formed at the crown of the bulbs.

BY SEED.—This mode of propagating Gladioli is rarely adopted except for the purpose of raising new varieties, owing to the long time, in some species, which must elapse before the plants come into bloom. When, however, such a course is taken, in the case of the hardier kinds, as *G. communis* and *G. Byzantinus*, seed-pans are prepared by being filled with a mixture of leaf-mould, loam, and sandy peat. In these the seeds are sown thin, near the end of February, and covered with the soil so as to lie about half an inch below its surface. After the seed is sown, the pans are set in a greenhouse, where the seed very soon germinates. During the first season the young plants do not demand from the cultivator much time and attention, the chief object being to promote their vigorous growth for as long a period as possible, by giving them an abundant supply of water throughout the summer, and plenty of light. They must also be kept clean by weeding, and protected from the destructive attacks of slugs. When the season of growth for the year is over, the pans require to be carefully watched, so as to prevent the soil from drying too rapidly, as well as from becoming too dry, because the bulbs being very diminutive, they contain but a small amount of their proper juices, which is therefore liable to be speedily exhausted; in which event they often perish from excessive dryness during the first winter of their existence. This care being taken, they are then put in a cool but dry place, where they will be fully protected from frost.

By Offsets.—The larger bulbs produce a considerable quantity of these, but they are not much valued, for some two or three years must elapse before they flower. When these are thought worthy of being grown, they are of course separated from the parent bulb and planted in nursery beds until they arrive at maturity, and have acquired a flowering habit.

By Bulbs.—Bulbs planted in the spring form three or four new bulbs, at the crown of the old one, of sufficient size to flower in the ensuing year, and these are ordinarily sufficient to augment the stock, or supply any loss.

Spring Treatment of Seedlings.—In spring the young bulbs are placed in a warm pit or greenhouse, to start them into growth. As soon as this effect is produced, they are transplanted into other pans, or pots, filled with a richer soil than that in which the seeds were sown. They are set rather thickly, and when the planting is completed, the pans or pots are deposited where they can be shut up close, and a moist atmosphere supplied for a few days, until they again begin to grow. During the growing season, the same care to keep the plants free from weeds and the attacks of slugs is as necessary as in the previous year, as also the like attention to watering, so as to promote free growth as late as it can be continued into the autumn, when they must again be brought into the same state of rest in which they passed the first winter. In the following spring the bulbs may be planted singly in smaller pots, and the same treatment applied as to *Gladiolus cardinalis*, by which many will in the approaching season produce their virgin bloom.

"Seedling Gladioli," says Mr. Herbert, "will often flower the first autumn; the best treatment is to sow the seed in pots, and give them shelter till the seedlings are pretty strong, and then turn out the ball unbroken into the border, where they will produce a crowded nosegay of flowers of various shades of colour.

GENERAL TREATMENT OF G. COMMUNIS AND G. BYZANTINUS.—Among the harder species of Gladioli is *G. communis*, which, though not one of the most ornamental, displays in the months of June and July its reddish flesh-coloured flowers, and is a great addition to the flower garden, as is also the Turkish Sword

Lily (*G. Byzantinus*), which produces large long spikes of flowers of a deep crimson colour, in considerable profusion, during the months of July and August. Having obtained a sufficient supply of the bulbs of these species, from seed or other sources, they must be grown in a rich soil, rendered free and open by the addition of a quantity of sand at the time of planting the bulbs. They may be allowed to remain for two years in the bed in which they are planted, but at the end of the second year it is best to take them up, divide the mass of bulbs, and replant them, by which treatment finer flowers are obtained than if the plants were permitted to grow longer in one place undisturbed. Grown thus in beds, the Cape Gladioli generally bloom with greater beauty, bearing finer and better flowers than those which are grown continually in pots.

FORMATION OF BEDS FOR GLADIOLI.—One of the most beautiful of this ornamental genus is *G. Natalensis*, or, as named by some botanists, *psittacinus*, which was imported from Natal river in 1850. As is the case with bulbs generally, the most satisfactory result is produced by planting them out in beds rather than growing them in pots, and in masses rather than as single plants; grown in beds, or in masses in the border, like the Tulip, they present a most gorgeous appearance in the flowering season, which is August. The beds for them may be made ready in the course of winter, or at the beginning of spring. The soil should be dug very deep, and left rough, a good supply of dung well rotted being added, and if the earth be of a stiff quality, a small quantity of sand will improve it. If the soil be light, of course it will not be necessary to add the sand.

Planting out.—This operation should be performed near the middle of April, preparatory to which the beds should be marked out into rows twelve inches apart. The rows should be made four inches deep and a little sand laid along the bottom of them. Then, having carefully separated all the bulbs, plant them, one only in each spot, leaving a space of nine or twelve inches between each pair, in the rows, and round every bulb put sufficient sand to enclose it and keep it from immediate contact with the surrounding soil, after which fill up the rows. This being done, little attention will be required beyond keeping the bed free from weeds, driving a few stakes round the beds, and tying to them two lines of tarred twine, to support the outside plants. Thus treated, the flower-buds will begin to expand towards the end of July, and will retain their beauty until the latter part of August, especially if a supply of water, liberal according to the season, be given them just prior to the opening out of the earliest flowers. In applying the water, it should be given at the roots, because if applied overhead, it will settle, and remain at the bottom of the leaves, when, if dull or extremely hot dry weather should follow, the leaves will be scalded; the effect of which would be to destroy the bottom leaves and greatly diminish the beauty of the bed.

Taking up the Bulbs.—When the stems and leaves of the Gladioli become brown, or are damaged by frost, which will usually be the case ahout the latter end of October or in the early part of November, it will be necessary to take the bulbs up, and when they are sufficiently dried, they must be put where they will be moderately cool, but so as to be perfectly protected from injury by damp or frost during the winter. In the spring they must again be divided, and treated in the manner previously directed.

SUCCESSION OF FLOWERS.—By planting the bulbs of the Gladioli at different periods, a succession of flowers may be procured. If some bulbs be planted in pots early in spring, and then put in a frame or pit, where a small degree of artificial heat may be applied, and afterwards be planted out in May, the flowers may be had in bloom from the middle of July to the middle of October, provided means are used to protect them from frost during the latter part of the time. A bed of *G. psittacinus*, or Parrot Gladiolus, so called because of its curiously-shaped bright orange and scarlet flowers makes a brilliant display when the long compact spikes are covered with expanded bloom.

TREATMENT OF G. CARDINALIS, OR THE SUPERB GLADIOLUS.—This species and hybrids partaking of its nature take rank immediately after *G. Natalensis* in respect of their beauty, but they are both less hardy and also less vigorous. On these accounts they need to be advanced early in the spring, and to be planted out in the beginning of April, in beds, as directed for *G. Natalensis*. These beautiful flowers merit all the care they need, for when a bed of them is in full beauty the rich scarlet flowers present a most magnificent appearance, the bright colour being agreeably relieved by the white centre of each. Several of the hybrids are exceedingly beautiful, and have been raised from *G. cardinalis* with *G. blandus*, the respective colours of each varying in proportion in different plants. Mr. Herbert has produced a very showy one, with large flowers of a brownish-purple, the upper petals being marked slightly with white in their centre: this is named *G. pudibundus*. Another has scarlet flowers with pale yellow marking, known as *G. Colvillii*.

There is a difference of opinion as to the hardiness of *G. cardinalis*. Some of those who have grown it successfully allege that, when allowed to remain in the ground during winter, they are invariably affected by damp to such an extent that their growth is retarded in the spring, and not starting so early as when taken up, they rarely flower so well in the second year, though they may have been ever so carefully protected; hence that they need to be taken up every autumn. Others declare that hybrids of *G. cardinalis* do very well in the open border, though entirely unprotected, and bloom finely every year. Mr. Mackenzie says that *G. cardinalis* is also hardy, and that one year he had, in a bed about twelve feet by seven, not less than five hundred trusses of this magnificent flower at Blair Adam. He adds: "It is generally considered tender; yet it grows here on an elevation of about nine hundred feet above the level of the sea, the subsoil naturally cold and wet, in rather a light soil, with little or no protection. For two winters I gave a covering of leaf-mould, about two inches deep; but the last two winters they got none whatever, and the result is that they were never seen growing here in such luxuriance and splendour. About the beginning of October, when I wish to propagate them, I take from well-established plants a bulb or cluster of corms, about one or two feet in circumference, from one side of the strongest plants, and plant them in beds two feet wide, and the plants one foot apart, putting a little sand beneath the bulbs; and in the course of two or three years the beds will be covered with the plants: I plant them about two or three inches deep. In 1839 I planted a bed in this manner, and with as little care as I would take in planting any herbaceous plant; yet in both seasons, namely, 1840 and 1841, the bed has been nearly covered with strong trusses of flowers .... Single bulbs should be grown in pots, and protected during winter (especially from damp) until they grow into a cluster of bulbs. When they have attained a sufficient size, they may be planted out with safety, and will stand the winter."

Soil for Gladioli.—It is a good plan, in order to protect these beautiful plants from the injurious effects of excessive moisture, to prepare the beds by supplying them first with good drainage at the bottom, allowing sufficient space above to receive a quantity of compost one foot thick, so that, when filled in, the top of the bed may be even with the surrounding surface. The soil should be composed of one-half turfy loam, one-fourth leaf-mould, and one-fourth of well-rotted cow-dung and sand. In planting beds thus prepared, the rows may be marked upon them, and the bulbs laid on the surface, with an envelope of sand round each, to protect them from damp, and then a stratum of soil added, about three inches thick, which will raise the bed a little above the general level of the ground, and cover the bulbs with a sufficient quantity of soil. Some growers are in the habit of covering the beds with a layer of spent bark, or decayed leaf-mould, three inches thick, to shield the bulbs from wet, but this is not considered sufficient if the planting be followed by long-continued rains; in this event, the beds are protected by hoops and matting.

SUMMER TREATMENT.—If the beds have been covered with any light litter, to keep off the rains of spring, this must be removed as the season advances, after which the principal care required will be tying up the stems of the plants, for unless the weather be unusually dry, the beds will not require to be watered. If water be needed, it should he given liberally.

CULTIVATION OF GLADIOLI.—Mr. Duncan, in the Horticultural Society's Journal writes:—" Few plants are more beautiful or better adapted for ornamenting the drawing-room and conservatory for a lengthened period than some of the varieties of the genus Gladiolus. I have for several years cultivated many of the sorts, but more especially the *G. insignis*, *Byzantinus*, and *cardinalis*; and certainly, the brilliant display of flowers they produce will amply compensate for any trouble that may be taken in their cultivation. The last week in September is the time I usually repot them, using pots of various sizes, from five inches to a foot in diameter, in order the more readily to adapt them to ornamental pots, vases, or stands, as future circumstances may require. The soil I have found best suited to their growth is composed of yellow fibrous loam and turfy peat, of equal quantities, with the addition of a little silver sand and leaf-mould, using it in a tolerably rough condition over a thorough drainage. The number of bulbs placed in each pot is regulated by their size, the largest pots usually producing from fifteen to twenty spikes, of the most fascinating colours; and whether placed in stands amongst the foliage of the conservatory plants, or plunged in vases or baskets of moss and lichen, the effect is gorgeous and pleasing. Liquid manure is frequently administered during the period of growth, and when the plants have done flowering they are removed to the open air, for the purpose of perfecting the process of vegetation. So soon as the foliage shows symptoms of decay water is gradually withheld, and the pots are finally laid on their sides in a shady situation, in order to moderate the action of light and moisture on the roots while in a state of repose."

G. GANDAVENSIS, OR THE GHENT GLADIOLUS.—This variety is supposed to have obtained its name from the circumstance of its being imported into England from Ghent. It is an exceedingly desirable addition to our collection. It is doubtless a hybrid, and may probably be entitled to claim *G. communis* for one of its parents. It bears considerable resemblance to that species; but its flowers appear more like those of *G. pudibundus*, and have some of its tints. It is a noble variety, and yields a great profusion of flowers.

This variety may be grown with great success by planting the bulbs in somewhat coarse rich soil, good drainage being provided. If cultivated in pots, they should be sufficiently large, for they will not grow freely if the roots are kept in a too much confined space. The situation which seems to suit them best is a border, in a pit duly prepared, or they will do well in front of a plant-house. In whatever situation they are planted, it is well to take up the bulbs every year, when the leaves are perished, and to replant them some time in November. They are readily propagated by taking off from the old bulbs all the young corms when they are lifted. When a handsome specimen is desired, two or three old bulbs may be planted together. But although they are to be admired as pot plants, yet when planted out in a free soil they appear to thrive better, assume a new character, and constitute objects of the greatest splendour.

GLADIOLI AND CAPE IRIDACEÆ IN THE OPEN AIR.—J. C. B. gives, in the *Gardeners' Chronicle*, the following account of his treatment of these bulbs in the open air:—"I am a great admirer of this beautiful family, which I think is somewhat neglected in England. It is impossible to givc any recipe for growing them, because they are of very various constitutions. By far the greater portion of them may, however, be grown to perfection in the open air, in the south of England, by making a bed of sandy peat in a sunny situation, and therein planting them, covering the beds during severe frost or very wet weather. I used to grow a great many kinds in Devonshire, in small beds filled to the depth of two feet with a compost of two parts sandy peat, one part fine river-sand, and one part rich garden soil, of a loamy nature. The tough roots contained in the peat were laid at the bottom of the bed, along with some stones for drainage, and the mixed soil laid loosely upon it. In such beds the plants will require no further care, except in winter. They do not generally suffer from the cold, but from the wet, or from the effects of the sun following a severe frost. They should never be disturbed after their first planting, as many of the species are very apt to rot if removed; it is therefore obviously undesirable that any other plants should be placed in the same beds. No stable manure should on any account be applied, as it will certainly kill all the more delicate species. The best method of enriching the soil is to thatch the beds with straw, and let it decompose as it will. No other manure should ever be used; and if the beds are properly formed, the thatch may be made to supply all the purposes of a covering, to keep off the frost and water during the winter. Although the above plan will suffice for the growing of the greater portion of the family, yet it will not do for others; it will not do for any of the species which flower in the spring, and it is unnecessary for the very late and robust ones, such as *oppositiflorus* and *Natalensis*. The spring-flowering species cannot be grown in the open air, because their leaves sprout in autumn, and will not bear any severe frost; they must therefore be grown under glass, or not at all. Certain other kinds require a very much more sandy soil, and will not thrive even in a sandy peat; but as these peculiarities can only be discovered by extensive cultivation of the species, I will mention a few of my results derived from the cultivation of upwards of a hundred. The greatest difference in constitution observable among the individuals of any one of the genera is in Gladiolus. All the common kinds may be grown as I recommend; but to grow *alatus*, *viperatus*, *roseus*, *debilis*, *versicolor*, and probably some others which I have never possessed, you must have a bed of nearly pure sand, from the more barren parts of heaths. In a pure white sand of great depth I have seen *roseus* (which is a variety of *hirsutus*) five feet high, with thirteen flowers on the stem; while in a soil still very sandy, but which would slightly bind, it would not grow eighteen inches, and produced only about five flowers. *Watsonia gracilis* aud most of the varieties of *G. hirsutus* flower very early in the spring, and therefore cannot be grown in the open air; they also like sand. On the contrary, *Natalensis* will grow well in ordinary rich soil of any kind, and *oppositiflorus* and its hybrids in a soil of light peat mixed with loam, in about equal proportions. In such a soil I have grown the hybrid *Natalensis oppositiflorus* or *Gardinensis* nearly six feet high, bearing twenty-two flowers on the main stem, and having five lateral branches. Almost all Ixias, Sparaxis, Tritonias, and Morœas, may be grown in the ordinary Gladiolus compost; but the Trichonemas, Lapeyrousias, and Babianas require sand. Watsonias and Antholyzas are not particular in their soil, but are difficult to cultivate in England, because they either sprout in the autumn or are evergreen; and their leaves will not bear frost, which, although it will not kill the roots, will prevent their flowering, by destroying the leaves. I would observe, that the sand of which I speak must be the sand from the surface of peaty heaths; it must neither be red nor yellow, nor must it be taken from beneath the surface, but must be a fine, sharp, white sand, rendered of a greyish colour by the admixture of a very small quantity of peat. I imagine that the oxide of iron, which forms the colouring matter of the red or yellow sands, is very prejudicial to these roots; but if all the poor soils in the neighbourhood of the cultivator should be coloured, let him carefully scrap up the mere loose surface, which will always be much purer than the body of the soil, and will rarely injure any plants."

THE RHODODENDRON.

It is nearly two hundred years since the first species of this lovely genus of flowers was brought into England. This was *R. hirsutum*, the hairy-leaved Rhododendron, and it was imported from Switzerland, on the high mountains of which country it is abundant. Doubtless, our ancestors in those days were less enthusiastic about flowers than we are, and hence we need not be surprised that this ornamental shrub should be so long the solitary representative of its order amongst us. Nearly a century, however, elapsed before another species of its race found its way from the same country into our gardens, at least we have none other recorded before *R. ferrugineum*, or rusty-leaved, which came from Switzerland in 1752. Both these species have scarlet flowers, and abound in Austria, Piedmont, and Savoy, as well as in Switzerland, and appear to be indigenous at a greater elevation than any other ligneous plant. They are said to yield the shepherds of those mountainous districts their only fuel. They appear also to possess a very desirable recommendation as plants for shrubberies in parks, etc., since animals, as sheep, will not eat them.

It was one hundred and eighty years after the introduction of *R. hirsutum*, before any other species, from any country, was brought in, and this was *R. maximum*, a splendid tree with pink flowers, growing to the height of twenty feet. This came from North America, where it grows naturally on rocks and in barren soils, continuing in flower great part of the year, and being extremely ornamental.

We have also other species from Siberia, Kamschatka, Gibraltar, and Nepal, some splendid and all highly ornamental. One of the handsomest of recent date to be found in our gardens is the Java Rhododendron. Its foliage is beautiful, being of a light glossy green, and this with its rich orange-coloured bloom will ever cause it to be a marked favourite. Its constitution unfortunately is delicate, which necessarily prevents its universal cultivation, to which its merits eminently entitle it. So far as experience goes, it must be confined to the possession of those favoured individuals who can grow stove-plants; in their hands, and subjected to the treatment commonly bestowed upon denizens of the stove, this admirable shrub may generally be cultivated to perfection, and will reward its owner with a fine truss of beautiful blossoms at the point of every shoot. It thrives most satisfactorily in a soil compounded of leaf-mould, fibrous peat, and silver sand, provided there be ample drainage, without which success cannot be looked for.

Among the hybrids of this beautiful order there is a noble variety raised by Mr. Smith of Norbiton, Surrey. He named it *R. Smithii aureum*. It was obtained from a hardy seedling grown by Mr. Smith, the flowers being fertilized with pollen from *Azalea sinensis*. The variety is also hardy, evergreen, and has its foliage much wrinkled. The flowers, forming a depressed cone, are each above three inches in diameter. The ground-colour of the flowers is yellow, and it is slightly shaded towards the outside with a pale brown tint. The top petal is spotted with brown. When this variety comes into flower it bears lifting well, and may be placed in a pot in the greenhouse, where the delicate beauty of the bloom may be preserved in its prime for a longer period.

Rollisson's Rhododendron (*R. Rollissonii*) is also a striking variety. It is so nearly like *R. nobile*, the Ceylon variety of *R. arboreum*, particularly as regards the deep red colour of its flowers, and the denseness of their arrangement, that it might be supposed to be the same. The under surface of the leaves of this variety are, however, rusty, while that of the Ceylon variety are silvery. The origin of this is consequently to be sought elsewhere. It is one of the handsomest of varieties. It is somewhat more tender than *R. arboreum*, and needs a warmer situation. The plants, when they have ceased flowering, ought to be kept in a warm pit, rather close, so that the growth of young shoots may be encouraged. They may afterwards be set out of doors in summer, and the pots be top-dressed with fresh cow-dung. A plentiful supply of water should also be given. Some surprise has been expressed that the Indian Rhododendron should be tender, because of its being found in Nepal. Dr. Royle, however, says that it is only found at the lowest elevations, and in the most southern latitudes of the Himalaya. True, it bears considerable cold in those regions, but the rise and fall of temperature are gradual, and better enable a plant to resist the climate. If the most northern stations for the Rhododendrons are thus comparatively mild, how much more so must those be to the southward, and how small the chance of acclimatising *R. nobile;* notwithstanding that, we are assured by Mr. Walker that the shoots of the Rhododendron are shrivelled up in Ceylon, as if they were scorched, in consequence of continued cold mornings, which blight everything.

A gentleman residing in Ceylon, speaking of the *R. nobile*, writes as follows of the appearance of this flower there in the month of July:—"I write from a plain over eight thousand feet above the level of the sea, which presents just now one of the finest sights imaginable, being one sheet of scarlet as far as the eye can see—the *Rhododendron nobile* being in full flower; but from the great elevation and consequent cold, the tree does not attain a greater size than a well-grown apple-tree; in the valleys it blossoms there months earlier, and grows considerably larger. As British genera abound here, and have frosts in the mornings, I feel confident that it would succeed well in Ireland in the open air, and stand the severest winter."

Although there have been at all times many lovers of nature, and admirers of the beauties of Flora and of a well-cared-for flower garden, never has the love of this harmless enjoyment been more uniformly constant than at present in England. The generally hardy character, or nearly hardy character, of so many species and varieties of the Rhododendron has done much to extend this feeling, and has enabled us to change the face of our grounds by planting masses of these gorgeous shrubs in beds and borders. Nothing can exceed their richness when in full bloom, even the roses of June have their lustre dimmed by the exquisite beauty of these flowers, and when we take into account also the evergreen foliage of the shrubs, it seems doubtful whether the Rhododendron's claim to be the "queen of flowers" does not rival that of the rose; were it not for old associations, wound up in our own personal history, as well as in the annals of our native land, the former must undoubtedly bear away the sceptre. But so deeply are the recollections of early childhood associated with the English rose, that, for centuries to come, the masses will ever regard it as the "queen of flowers."

Propagation.—The Rhododendron may be propagated either by seed, or by layers, or cuttings.

By Seed.—The seeds of the Rhododendron are very small, and in propagating this glory of our gardens from them very much care and attention are needed. The first thing is to provide seed-pans or large pots with wide mouths, and to furnish them with abundant drainage, and then fill them up with sandy peat. The seeds are then sown very thin upon the surface, the soil being first watered; and after the seeds are sown they are pressed gently into the soil, and sprinkled over with a small quantity of white sand. The sand is serviceable chiefly because it renders the surface more firm, is less liable than the peat to be disturbed when water is given, and it also acts so as to prevent dampness. This is done in the earlier part of spring, and then the pots or pans are set in an old cucumber bed, a pit, or a closed house, and covered with bell-glasses. The seeds, if not covered too deeply, will soon germinate, and when they have attained sufficient growth to bear removal (which they will bear as soon as they can be laid hold of), they are transplanted into other pots, well drained and filled with the like soil, or with a mixture of one-half peat and the other half sand. If they thrive, as they may be expected to do under careful management, they will be sufficiently established by May to allow of their being put into a cold frame or pit in which there is no artificial heat; and throughout the whole of their treatment great care must be taken not to let them become dry, as that condition is most fatal to them while they are young.

BY LAYERS.—The propagation of the Rhododendron by layers may be made at any time when the shrubs are not in bloom. Those branches which are one or two years old may be selected for the purpose. These must be pegged down so that the point from which it is desired they should form roots may be two inches below the surface of the soil, which must be of a sandy character. The most suitable seasons for commencing the operation are spring and autumn. This mode of propagation requires much patience on the part of the propagator, since the plants will not be fit to remove for two years. They will then have supplied themselves with a sufficient apparatus of rootlets to maintain their existence independent of the parent shrub.

By Cuttings.—This is a more expeditious mode of propagation than the last. The shoot from which the cutting is taken should be of recent growth, but yet not from the extreme point of it, because that part would be too soft and young, and also so charged with moist juices that it would inevitably rot. On the other hand, if the wood be very hard and dry, then it would neither possess nor be capable of absorbing sufficient moisture to sustain life, much less to emit rootlets. On these accounts, then, half-ripe wood must be chosen, which will be best obtained by selecting that part of the shoot where the old and young wood join. Also the cuttings must invariably be taken below a bud, as it is only from the eyes or buds that a cutting can push out root-fibres. If there be no bud left at the base of the cutting, it is apt to decay. Care is also to be taken to cut the base as smooth as possible, so that it be not jagged, nor yet the bark bruised.

We have elsewhere stated how important it is in striking cuttings to provide ample drainage in the pots, and also how necessary that some degree of heat should be applied as well as moisture. Too much of the latter, however, is dangerous and will destroy the cuttings, while the other applied immediately on placing them in the pots, if not of a low temperature, will kill the cuttings, by exhausting them of moisture. The operation may be performed either in spring or autumn; some practitioners give a decided preference to the latter season.

PROPER SITUATION FOR THE RHODODENDRON.—The situation in which to plant the Rhododendron is by no means an unimportant matter. Exposure to the full force of the sun in spring and summer, in localities where, or in seasons when, the atmosphere is dry, renders the leaves liable to become sickly, and changes their otherwise vivid green to brown. Sometimes the whole shrub will die from the effects of drought at times when water is daily and abundantly supplied. An artificial supply of water is insufficient to keep plants alive in very dry seasons in situations thus exposed, unless they be growing in a moist clay, which soil is indeed nearly as injurious as drought. It follows that the Rhododendron should be planted where it will be sheltered by a lofty wall or tall hedge; a northern aspect suits them well if they are protected by a wall behind. In such a position they will need little attention; but if they are from necessity planted in an open situation, they will require frequent supplies of water in spring should the weather be dry, for if that be withheld the flower-buds will die off, and never display their beauty.

PLANTING.—In performing this operation with the Rhododendron it is best to make a hole of much larger dimensions than the size which the mass of roots seems to require. In depth it should not be less than a foot and a half. Having prepared the hole, fill it with peat-earth, or, as a good substitute, with decayed leaf-mould and loam, well mixed with sand and rotten dung. In planting the shrub, bestow considerable care and exercise patience in spreading out the root-fibres in every direction. Then, instead of using the common mode of rendering the freshly-planted shrub firm and stable in its new position, by treading down the surface all around with more than the still weight of your own body, give an abundant watering to the loose earth in which it is placed, by which it will become solidified, without injury to the roots.

SOIL.—It is a general opinion that the Rhododendron will not grow freely in common garden soil. That this is, in the main, true there can be no doubt, and wherever pure peat and heath-mould can be obtained, it is best to use it; yet where heath-mould is not abundant, it will be found sufficient if as much as will fill a hole such as that above described be given to each plant, provided the subsoil be not very dry. If the situation be very dry, then it will render the peat-earth still more suited to the constitution of the Rhododendron if a little loam and a small quantity of cow-dung well rotted are added.

One main permanent condition of peat-earth is freeness and friability, while it possesses the quality, equally permanent, of absorbing and retaining moisture; hence it is remarkably well adapted to plants which cannot long endure dryness, nor yet live where the roots are earth-bound. If, therefore, a compost can be made resembling peat-earth, as to its freeness and retention of moisture, there is no reason why the Rhododendron should not flourish nearly as well in the former as in the latter. This has been successfully made by the mixture of loam and leaf-mould, with the addition of rotten cow-dung and sand, so as to approach as near as possible the texture of peat. Where a compost like this is used, it is well, as the summer following the period of planting the shrub advances, to top-dress the soil around each with cow-dung, if to be had, and, for want of this, leaves in a state of decay may be substituted. Cow-dung is to be preferred, but either of them will have the effect of keeping the roots cool, and keeping them in a condition as closely resembling that where planted in peat, as can well be desired.

To promote Free Blooming, and to procure Large Flowers.—To secure these objects, care must be taken to remove the seed-vessels as soon as the flowers have faded, while they are just forming. It is well known that the efforts of a shrub or tree to form, grow, and perfect seed, exhaust the organizable matter produced in the branches by the elaboration of the sap. This matter therefore being thus exhausted, there is a scarcity of the material required in the formation of buds and flowers, and consequently in the succeeding season these will be deficient both in number and magnitude. Hence it follows that the removal of the seed-vessels immediately on the fading of the flowers does away with the exhausting demand upon the matter stored up in the branches, which being, by this means reserved in them, is ready to supply the buds and blossoms of the ensuing year. Any one may readily prove the truth of this principle by removing the seed-vessels from one shrub, and allowing them to remain on another, when, all other conditions being equal, the result will surely prove the great advantage of the practice.

STANDARD RHODODENDRONS. — In order to grow these, a number of seedlings are taken from their bed and set in good leaf-mould, at a distance from each other of about eight inches. Here they are allowed to remain until they have grown to the height of four or five feet, which they will ordinarily do in the course of three or four years. They are not thinned during this period, so that they are forced to grow upwards instead of laterally, but when they have attained somewhat near the required height, all the side shoots are pinched off, and this operation is continually repeated until the full vertical growth is gained, when they are allowed to form the head. Grown as standards, Rhododendrons have a very agreeable appearance in the garden, and they flower as freely as when the shrub forms a bush. About four feet is the most desirable height, because their beauty then comes entirely under the eye of the beholder, and they are less liable to injury than when permitted to grow to a greater elevation.

PRUNING.—The Rhododendron will bear pruning as well as the common laurel; the best period of the year for the operation is early spring.

FORCING.—When Rhododendrons are desired to bloom very early in the year, say the end of March, or very early in April, they may be forced by placing them, at the beginning of the former month, in a pit or in a greenhouse of moderate warmth, where they will start gently. If forced by the application of great heat, the plants will be injured, and the future health of them be greatly impaired; besides which, the real object will be defeated by the flowers blooming immediately, instead of at the time required, since they are very apt to expand at once when the process of forcing is begun. The more slowly these shrubs are forced, the better it is for them.

GRAFTING.—This is readily performed with the Rhododendron. It may be done in the spring, though some prefer the months of August and September for those which are growing in the open air. If the stock or shrub on which the graft is to be made be thicker than the scion or shoot which is to be grafted, then side-grafting is the best, for the rind of the Rhododendron is very thin; this mode is fully described in the treatise on the Geranium. If, on the other hand, the stock and scion be of the same circumference, wedge-grafting is found to be the best.

If the grafted plants be growing in pots, then, as soon as the graft is put in, the pots should be placed in a closed frame or pit, and a little bottom heat should be applied, so as to set the sap in motion, and accelerate the union of the parts.

BUDDING.—This mode of growing the more tender varieties upon hardier stocks, so commonly practised for producing standard roses, has now been applied to the Rhododendron for some years. The buds are inserted after the manner of side-grafting, a portion of the soft wood being retained behind the bud. The season most suitable to the success of this operation is August and September, as recommended for grafting.

TO FLOWER RHODODENDRONS AT CHRISTMAS.—The following was communicated to the Horticultural Society by one of its vice-presidents, Sir Charles Lemon, Bart.:—"The circumstance which I am about to relate is of trifling importance, but may nevertheless interest those who, like me, cultivate the *Rhododendron arboreum*, and have seldom an opportunity of seeing its beautiful blossoms. I have for some years been in the habit of pruning the several varieties or sub-species of this plant as trees, and I find that they bear the knife well, and readily assume the character I wish to give them. In November, while engaged in this operation, it occurred to me that I might make some use of the branches which I had cut off, either by ripening the seed-vessels left from the flowers of last year, or by forcing into early blossom the buds already formed. With a view of accomplishing the first object, I placed some of the branches bearing seed-vessels in the dry stove, but they soon withered and came to nothing. Others were placed in the mud of a tank in the damp stove, in which were growing Limnocharis, Humboldtii, and other aquatics. This was done about the end of November. The leaves, however, drooped, and the cuttings remained unchanged for above a month; when, to my surprise, I found that the capsules were becoming turgid and full of sap, and that a stray shoot was coming from each cutting. At the same time a cutting bearing a flower-bud was placed in the above-mentioned tank. In about a month the bud began to swell, and at the end of a fortnight afterwards it expanded most beautifully. Thus I had an opportunity of seeing the blossoms of my own *Rhododendron arboreum,* at a season of the year when I am usually at home, and when flowers for decoration are much in request. As the plants of *Rhododendron arboreum* are greatly improved by such pruning, I intend to repeat the experiment on a larger scale next season, and shall be happy if what I now write will enable others to partake of the pleasure of seeing the June flowers of *Rhododendron arboreum* in abundance soon after Christmas."

YB 4865